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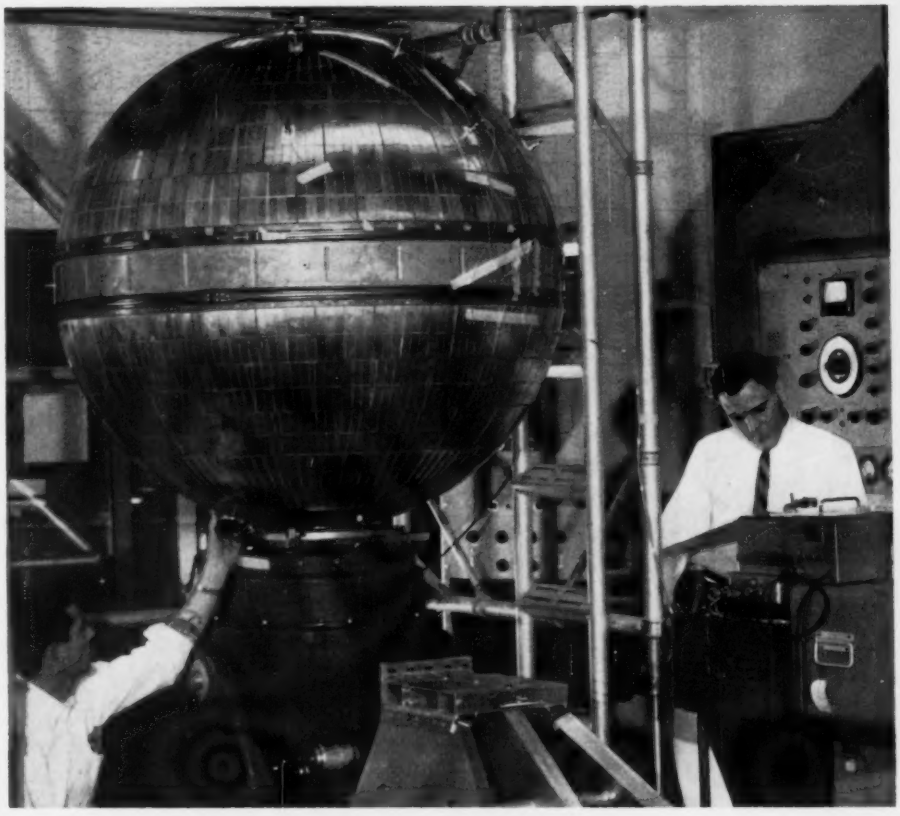
Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY



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The COURIER

Scientists mounting weighted model of COURIER on vibration table to test its performance under conditions encountered as Thor-Able-Star accelerates payload into orbit. Story on Army's Communications satellite on page 19.

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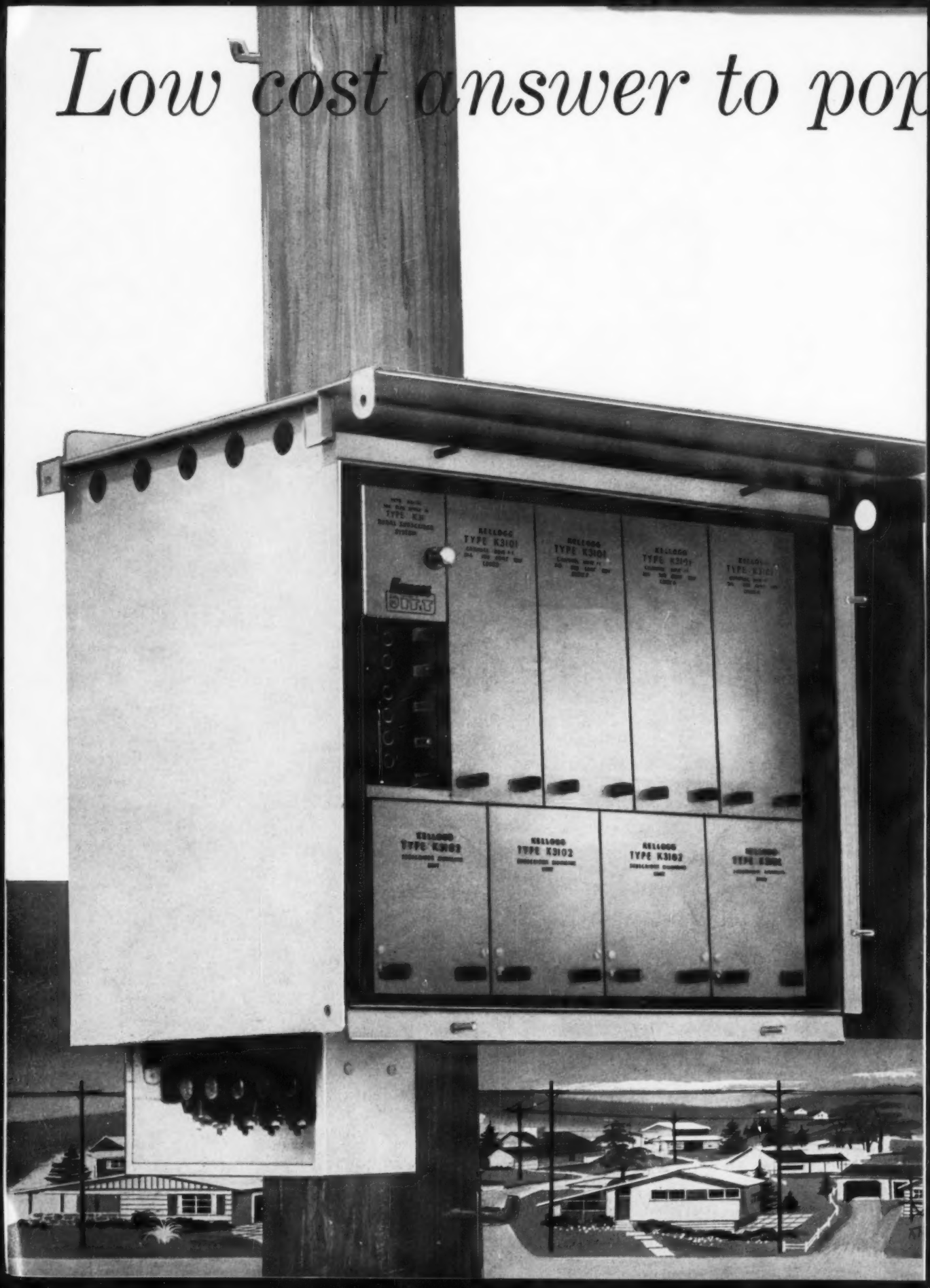

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If you have put off a major cable expansion because of the need to conserve capital, then Kellogg Carrier is your answer. Here's why: low-cost Kellogg Carrier can add from one to eight additional rural lines on an existing wire!

The result of expert Kellogg-ITT research, both the K-31 Rural Subscriber Carrier and K-32 Open Wire Trunk Carrier have been rigorously field tested and are in active operating service throughout the country. Both Systems provide economical means to expand existing facilities without sacrificing toll standard quality.

And with Kellogg's *exclusive* repeaters, carrier system mileage can be doubled (using one repeater) . . . *tripled* with two repeaters . . . or *quadrupled* with three repeaters! You'll find, too, that Kellogg Carrier has more exclusive features and is priced lower than any other comparable system on the market.

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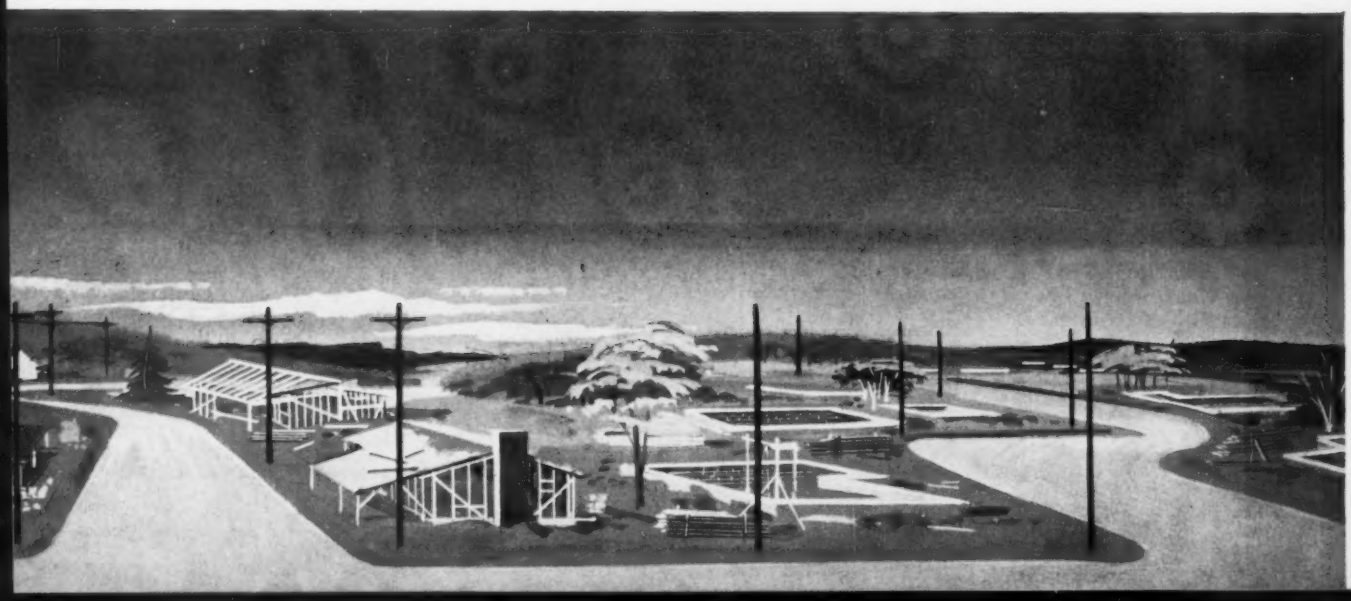

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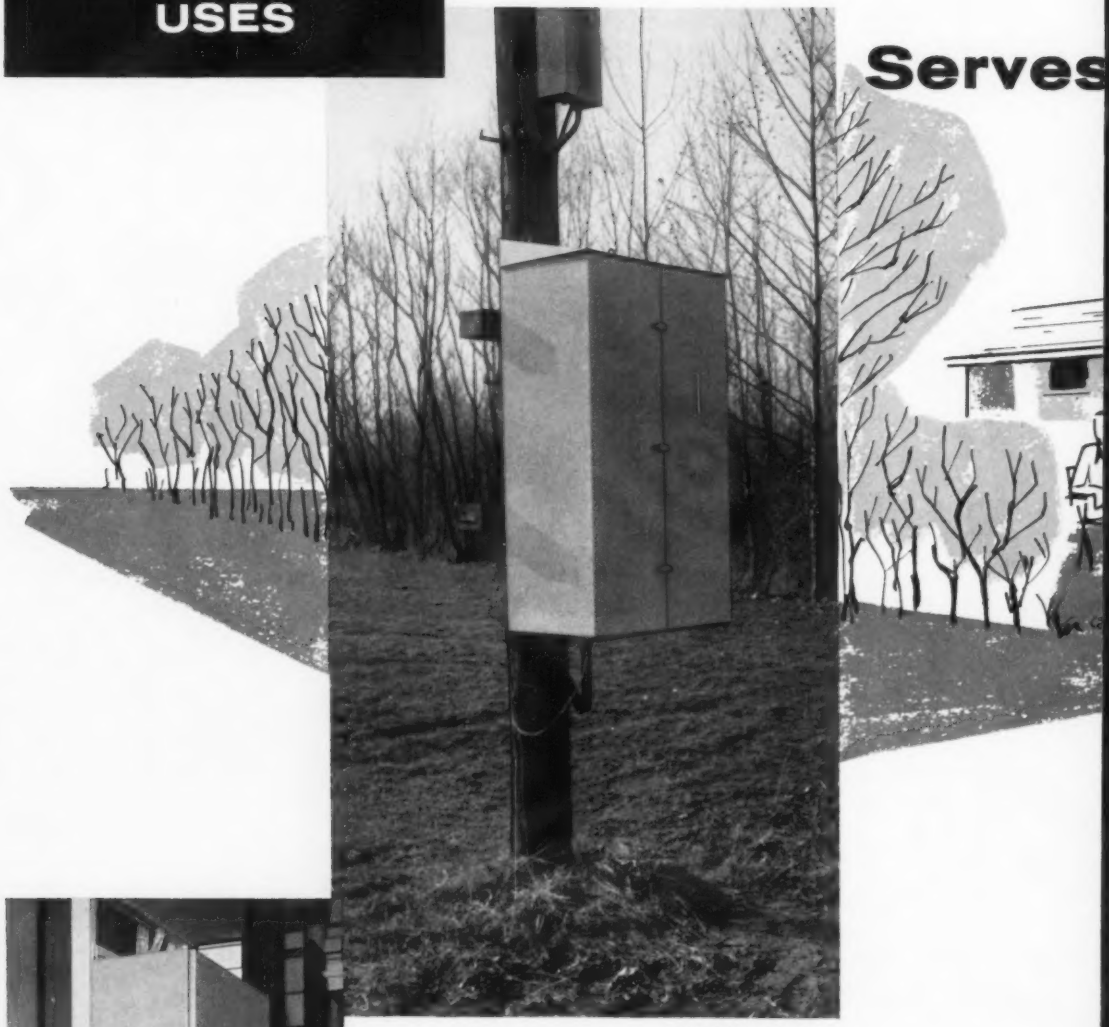

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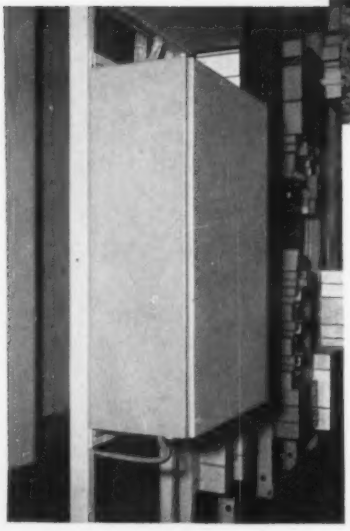

EXCHANGE UNIT

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That's exactly what Leich's Line Concentrator did. Instead of serving each line over a separate wire pair, it concentrates a number of subscriber lines over a much smaller "high usage" trunk group.

The cost-cutting story: Every pair of the 51 pair cable going past the proposed trailer parks was in use. As soon as the trailer parks were finished, subscribers would need service.

A Leich Line Concentrator was installed quickly. As the cement for the trailer parking stands was poured, underground cable was placed and terminated in cross-connecting boxes in which the 49 Concentrator lines appeared. This flexible arrangement permits line assignments to be changed without opening the Line Concentrator cabinet.

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FLASHES AND PLUGS

POOPED PIGEON CALLS FOR HELP. As the Indiana General Telephone Co. *News* tells it, "As General Telephone (Co.) continues to grow . . . the symbol and initials GTC are becoming increasingly familiar to everyone. Even pigeons. . . .

"A tired, sick and weary pigeon winging over Ft. Wayne, saw the initials GTC on the many trucks parked around the north warehouse and happily dived. He was home! Or at least, he thought he was home. . . . Didn't the initials all around him match those on his leg band, GTC?

"Confusion was compounded . . . when the division office staff filed in and found GTC fluttering around the office.

"Was this another front office program to keep General Telephone ready on *every* communications front?

"Since the GTC was followed by the number 1572, did this mean an entire fleet of pigeons could be expected?

"Did anyone know anything about taking care of sick pigeons?

"After much calling back and forth to local pigeon fanciers, it was finally determined that GTC stood for Greater Toledo Concourse and that this was a racing pigeon.

"The owners asked if GTC 1572 might be fed some bread crumbs and water for three days and then released out in the country . . .

"(After his release) GTC 1572 was back on course."

•

COMMENCE TO BREAK OUT. The L. & N. Employes' Magazine recently reported this story:

The university president was delivering his baccalaureate speech. In the audience were an elderly man and woman, obviously foreigners, who were having some trouble understanding the president's address to the class, of which their son was a member.

"What he say?" finally demanded the mother.

"Who?" asked the father.

"The big fellow in the black dress. What he say?"

"He say school is out."

•

UNCONTROLLABLE APPETITE. Any government that is big enough to give you everything you want is big enough to take everything you've got.

•

PUSSYFOOTING AROUND. The telephone directory of a Florida community carries the following intriguing listing: Gibson McVicker, 1308 Banyan Drive, Explorer.

A check recently revealed that Gibson McVicker's exploring is confined to neighborhood back yards. It seems that Gibson McVicker is a cat.

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

October 29, 1960

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Transistorized Carrier Systems

PANHANDLE

"X"

TECHNICAL SUMMARY

Voice frequency input level	4-wire operation — —16 dbm 2-wire operation — 0 dbm
Voice frequency output level	4-wire operation — +7 dbm 2-wire operation — —2 dbm or —4 dbm (with resistance hybrid and compromise network)
Normal HF channel transmitting level	—20 dbm
Maximum repeater gain at 336KC	28 db
Mean average noise for a 20 channel system contributed by terminals and repeaters using F1A weighting at 2-wire drop with filtered 48 VDC battery.	28 dba
Drop level stability: (1) Properly engineered systems (2) Battery supply does not have variations exceeding ±5%	±.2 db
High frequency input-output impedance	135 ohms
Power requirements: 20 channel terminals complete with 12 repeaters, one-way	4.15 amp. (maximum connectable load)
Channel audio response	300 to 3000 CPS to 3 db points nominal with ± variations
Channel Modulation Index	5 radians at 1000 cps 0 dbm — 2-wire drop —16 dbm — 4-wire drop
Mounting Dimensions: Master oscillator or distribution amplifier (normally one per bay front mounted only)	4 rack spaces — 7 inches
"A" Group — 10 channels	17 rack spaces — 29¾ inches
"B" Group — 10 channels	16 rack spaces — 28 inches
"A" & "B" Groups — 20 channels	33 rack spaces — 57¾ inches

"LL"

TECHNICAL SUMMARY

Number of Channels	Basic system consists of two, 4 channel groups: a high frequency (A) group and a low frequency (B) group
Carrier Frequency Spectrum	32-320kc Carrier Frequencies 26-326kc Utilized
Channel Frequencies: High Group	Spaced at 16kc intervals 192-320kc 186-326kc Utilized
Low Group	32-160kc 26-166kc Utilized
Maximum Carrier Frequency Attenuation	80db entrance cable (one or both ends) plus 25db open wire (not weather calculations)
Trunk Service Signalling Options	2-way ringdown 2-way E&M 2-wire 2-way E&M 4-wire 2-way simplex (dial leg) 2-way operator office 2-way PABX (with premonitory busy) Many other signalling options available for specific applications
Drop Level Stability	± .5db in properly engineered systems Battery supply not exceeding ± 5% variation
Carrier Send Level	0db to open wire — 20db to cable
Carrier Minimum Receive Level	— 40db
Carrier Terminal Output Impedance	135 ohms/600 ohms
2-Wire Drop Impedance	600 or 900 ohms
Derived Circuit Gain	— 2db/— 4db
Derived Circuit Response	300 to 3000 CPS nominal to 3db points with ± 1db variation
Mean Average Noise for an 8 Channel System Contributed by Terminals Using F1A Weighting at 2-Wire Drop with Filtered 48VDC Battery	20dba
Power Requirements	.9 amp maximum possible load for a 4 channel group. All units are powered by 48V C.O. battery
Channel Modulation Index	5 radians at 1000 CPS 0dbm 2-wire drop — 16dbm — 4-wire drop
Voice Frequency Input Level	4-wire operation — 16dbm 2-wire operation — 0dbm
Voice Frequency Output Level	4-wire operation — + 7dbm 2-wire operation — 2dbm or — 4dbm (With resistance hybrid and compromise network)
Mounting Space Requirement	The mounting plate for a 4 channel group occupies 11 rack spaces (19¼") in a standard 19" rack. The filter mounting plate occupies 4 rack spaces (7")

For applications on open wire, cable, and as multiplex for low density microwave systems, specify the most advanced carrier equipment available.

Technical assistance and detailed information may be obtained by contacting:

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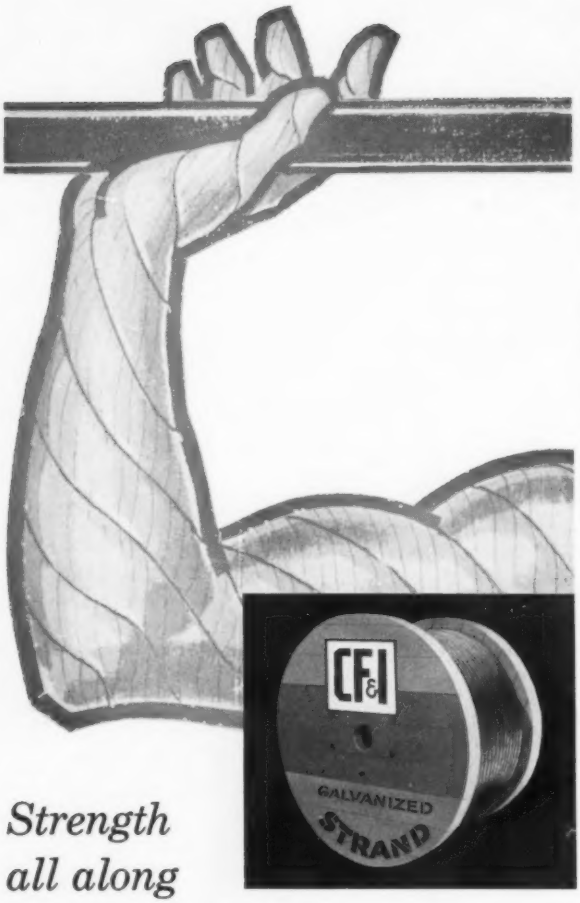
644 Braniff Airways Bldg.
Dallas 35, Texas

300 Exchange Pk., N.
Phone FL 7-8353



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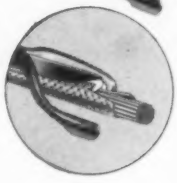

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by Ellsworth Nichols

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500 pages
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Five Loans Totaling $4,582,000 Approved by REA

LOANS MADE during the week of Oct. 10 by the Rural Electrification Administration will assist five borrowers to provide new and improved telephone service to subscribers in seven states as follows:

Campti-Pleasant Hill Telephone Co., Pleasant Hill, La.; $705,000; Oct. 10.

These funds will aid in enabling the new borrower to improve service for its 843 subscribers and to furnish initial service to 447 subscribers. The existing subscribers now receive dial service through the borrower's Campti, Pelican and Pleasant Hill exchanges.

A new dial central office will replace the existing building at Campti. The dial facilities at Pelican and Pleasant Hill will be expanded and used in place. The borrower also plans to construct new headquarters facilities at Pleasant Hill. A portion of these funds will be used to refinance the borrower's indebtedness incurred by improving the present system.

Lawrence M. Gill is president and Lawrence Max Gill is manager of the Campti-Pleasant Hill company.

•

South Plains Telephone Cooperative, Lubbock, Tex.; $425,000; Oct. 10. This loan will help to provide initial service to 382 subscribers in the present service area. A portion of the loan will be used to complete the authorized system. REA loans to this borrower will assist it to bring new and improved service to 2,882 subscribers. The cooperative's 15 exchanges are all in operation serving approximately 2,175 subscribers.

•

Western Counties Telephone Corp., Marathon, N. Y., (mailing address: 9 East 40th St., New York 16, N. Y.); $1,105,000; Oct. 12.

These funds will help enable the borrower to furnish initial service for 674 subscribers and to improve service for 1,566 subscribers. As a nucleus for the new service, the borrower plans to acquire the Dundee Telephone & Telegraph Co. which now serves the existing subscribers. These facilities consist of a common battery exchange at Dundee and dial facilities at Nimrod, Tyrone and Wayne.

New dial central offices will be constructed at Dundee, which will also serve the Nimrod exchange; and at Wayne which will include the Tyrone area. The borrower plans to acquire a building in Dundee and remodel it for general headquarters for the whole system. Toll facilities for the Dundee and Wayne exchanges will also be located in this building. A portion of these funds will be used to aid in installing automatic accounting equipment for recording toll calls in the Dundee toll center and in prior loan areas.

•

Ace Telephone Association, Houston, Minn.; $385,000; Oct. 13.

This loan will assist in improving service for 564 subscribers and in furnishing initial service to 97 subscribers in Minnesota and Iowa. The subscribers who will receive improved service are now served through the magneto facilities of the Canton (Minn.) Telephone Co., six small local switcher lines in the Canton community, and the Eitzen (Minn.) Switchboard Co. The borrower plans to acquire these facilities and to provide modern service in the two communities. In addition, 29 establishments now receiving switching service in the Spring Grove, Minn. area propose to abandon their facilities and become regular subscribers of the borrower.

The borrower plans to construct new dial central offices at Canton and Eitzen. The Eitzen exchange will serve in both states. REA loans to this borrower will aid in enabling it to bring new and improved service to 6,700 subscribers. Thirteen of the proposed 17 exchanges are now providing dial service to approximately 5,000 subscribers.

•

Western States Telephone Co., Holbrook, Ariz.; $1,962,000; Oct. 14.

This loan, together with 300,000 of the borrower's own funds, will be used to help furnish initial service to 2,241 subscribers and to improve service for 168 subscribers in Arizona, Texas and New Mexico. In order to furnish this additional service, the borrower plans to install automatic toll ticketing equipment and microwave toll facilities in the Arizona portion of the system. In addition, two-way radio communications facilities will be installed for system maintenance over the entire service area.

The 168 subscribers who will receive improved service are now served through the magneto facilities of the Whiteriver (Ariz.) Telephone Exchange. The borrower has recently acquired this exchange from the Department of Interior. A new dial central office will be constructed at Whiteriver.

Headquarters for the whole system is located at Holbrook, Ariz. The borrower now leases commercial office facilities in Truth or Consequences, N. M. to serve that portion of the system; and plans to construct a building in Fabens, Tex. to serve that part of the service area. REA loans to this borrower will assist it to bring new and improved service to 8,704 subscribers in the three states. The completed system will consist of 13 exchanges. The borrower now furnishes dial service to approximately 4,550 subscribers.

Stating Our Views

". . . When we, as citizens or as managers of an important industry, have honest convictions which we feel are good for the community as a whole, we should not hesitate to express them strongly. . . .

"If we do not make our views known, and if we don't express our views honestly and objectively, both as private citizens and as managers of an important industry, then I think we have neglected our duty to those who represent us in various government agencies.

"Our representatives may have an unbalanced point of view on matters that are vital to us because we have failed to make known our problems and our honest convictions." — KARL T. DUTSCHMANN, *vice president, New York Telephone Co.* (speaking at the most recent New York State Telephone Association convention).

Broad View of Economy

"Broadly speaking, the United States can avoid both inflation and unemployment by operating a free economy in which enterprise is open, competition is vigorous." — NEIL H. JACOBY, *dean, Graduate School of Business Administration, University of California at Los Angeles.*

Expansion in Norway

A total of 36,500 new telephones was installed in Norway in 1959-60, as compared with an increase of 18,600 in the previous fiscal year.

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BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

AT&T asks FCC authority to put up first commercial space communications satellite in cooperation with four European countries. . . . Would be forerunner of network in sky to transmit telephone, television and other types of communications. Welch discusses language barrier.

THE U. S. STATE Department, in Washington, last week raised the curtain just a tiny bit on the raft of international complexities which await the launching of earth circling satellites for commercial communication purposes. This is not to suggest that the obstacle course facing this fascinating new development in the telephone art will be too difficult. But it will take quite a bit of jockeying before the satellite relay business becomes a matter of everyday traffic routine.

Therefore, even though it will be about a year before the Bell System and its government allies at home and abroad put the first commercial telephone satellite in orbit, it is not too soon to start figuring out who pays for what, and how the business opportunities, duties, responsibilities, and controls will be divided up in such a ticklish area of international operation.

Four Nations Want In

According to the State Department, four nations, including the United States, Britain, France, and Germany, have asked for cards in this deal. The American Telephone & Telegraph Co. will be the main United States participant. It will represent necessarily Independent telephone industry interests in the development of this new form of overseas communication which will eventually connect through domestic telephone systems of both Bell and "connecting carriers."

Negotiation have been under way for some time between the Bell System and the government-owned communication services of Britain, France, and Germany. And our State Department, of course, has been closely advised because of the numerous international questions raised by the proposed establishment of a space communications system.

The Bell System officially kicked off this program with two filings before the Federal Communications Commission on Oct. 21. One seeks authorization for experimental use of frequencies in the 6,425-6,525-megacycle and 6,775-6,875-megacycle bands for sending and receiving messages from communications satellites. The other petition asks the FCC to allocate frequencies for space communications from the United States to Western Europe and the United Kingdom via active satellites. A simultaneous news release quotes AT&T Vice President Henry T. Killingsworth as saying that the initial Bell satellite, planned to be launched within a year, "will be capable of transmitting up to about 35 minutes some three or four times a day."

Will Be Active Type

As far as actual physical progress is concerned, Bell Laboratories at Holmdel, N. J., has been working on a satellite which will, in the beginning at least, be used only for experimental relays, including telephone calls. After a sufficient test period, however, a number of these satellites are being planned for orbit—each one capable of handling several hundred calls at one time.

Unlike the large, passive, and spectacular Echo, now revolving around our planet and visible to the naked eye of anyone who cares to look (on schedule), the proposed communications satellites will be of a smaller and active type. Echo, as most readers of this department are already aware, is simply a giant aluminum-coated plastic balloon, 100 feet in diameter, and capable of only bouncing back signals which are beamed to hit its surface. The proposed telephone relay satellite will be more like the Courier type recently launched by the Army Signal Corps, which carries electronic equipment capable of receiving and sending back radio signals (See other pages in this issue).

Who Will Pay For Project?

The Bell satellite, which is now being developed in the New Jersey laboratories, is said to be about 4 feet in diameter and to weigh only 175 pounds. It is expected to go into orbit, 2,200 miles about the earth's surface. (Echo's orbit is at an altitude of about 1,000 miles.) The extra elevation increases the scope of the relay coverage on the earth's surface during the periods of transit by the satellite across any given horizon.

But to get back to more worldly questions, literally speaking. Already the problem of who will pay how much for what has been discussed. Foreign telephone interests, wishing to participate, will naturally be invited to contribute at least to the extent of providing ground stations in Europe.

Naturally, the launching of any such satellite or series of satellites will provide an important precedent in future space communication operations. It would, for example, be the first—the pioneer—effort to exploit space commercially. Who would *own* the satellite once in operation? Who would control it? The old issue of public *versus* private ownership looms in the background. Bell System officials have emphasized the advantages of private ownership and operation in these dis-

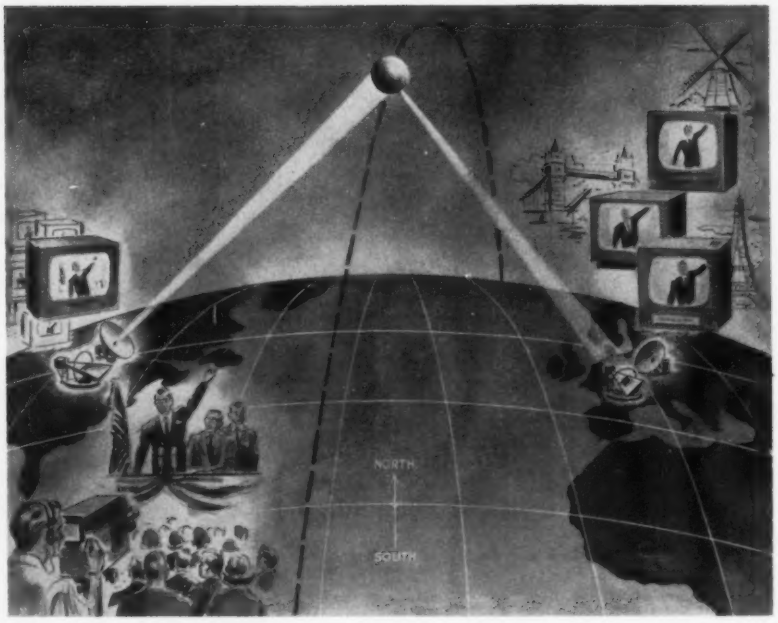
cussions. They would like to see these satellites work for a living, to pay their way, earn a profit if possible, contribute taxes, etc., just like any other business enterprise.

Break for Taxpayers

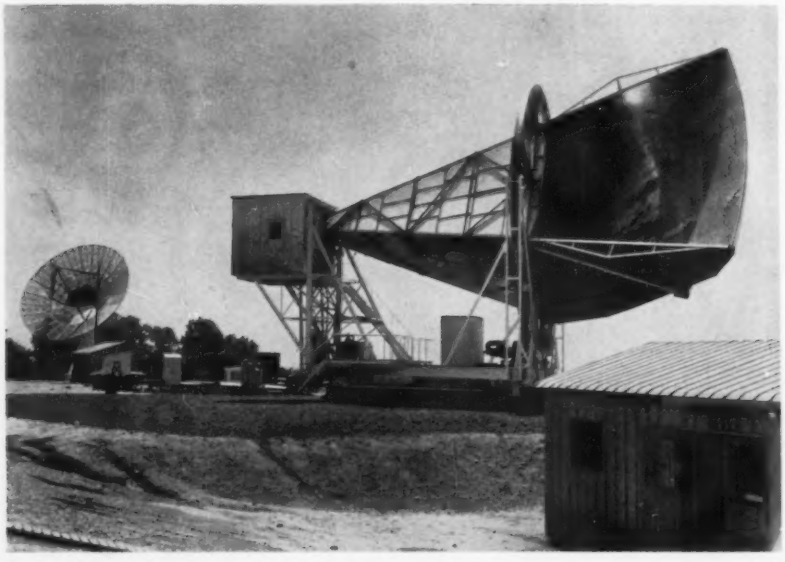
When we stop to think of the millions of taxes *contributed* to make possible all the other satellites now flying around in space orbits, the idea of making one of these expensive projects earn its own keep and perhaps earn a dollar profit and pay taxes is a refreshing change of pace, from the U. S. taxpayer's viewpoint, at least.

How do U. S. officials feel about this? No firm policy has yet been announced. T. Keith Glennan, head of the National Aeronautics and Space Agency (NASA), has been reported to favor a national policy of placing United States interests in such commercial communication in private company hands, subject to public control. This follows the familiar pattern, of course, which has been traditional in the United States and which has, on the whole, worked very well for development of the greatest national telephone industry anywhere in the world. This is simply the maintenance of private enterprise in the telephone industry, subject to public regulation. We now have this working at the local, state, and international level. Why wouldn't it work at the international space level?

How much will it cost? There has already been some Bell testimony before the FCC about a network of 50 satellites, to cost about 170 million dollars or a little less than 3.5 million dollars per satellite. That includes launching costs (missiles) but not ground station costs. Eventually, it is hoped that a cluster-type of launching, by which a number of satellites can be put into orbit with one launching—like beads strung on a necklace—will materially reduce the cost per satellite. One million dollars per item has been mentioned as a target price tag under such a setup. In any event, however, the capital investment will run up to a pretty penny. Yet it will certainly not be out of line with the trunk cable costs and will be much cheaper in the long-run, considering the much greater message-carrying-capacity.



Above artist's sketch illustrates how proposed satellite system would work. Television or voice signals would originate at the ground station on either side of the Atlantic, be beamed at the satellite as it passes in orbit. When the signal strikes the sphere it would be regenerated immediately and flashed back to earth.



Bell Telephone Laboratories "telephone terminal to outer space" at Crawford Hill in Holmdel, N. J. In the foreground is a horn-reflector antenna developed by Bell Laboratories as part of its satellite communication receiving system. The transmitter, a 60-foot dish is shown in the rear. Antennae are aimed at satellite in accordance with predicted orbit information provided by the National Aeronautics and Space Administration.

Fits Into Present System

One reason for keeping this satellite "necklace" within our traditional American pattern of private enterprise is the fact that these satellite relays will simply be a new method (more efficient and economical) of doing that which is now done by land wire, cable, and surface radio-telephone communication relay facilities. And since these new tools, to be useful, must be integrated into the existing systems of domestic and overseas telephone operations, it is difficult to see how they could be separated from existing system ownership and control of the present telephone industry network without losing benefits otherwise obtainable.

We can expect, of course, that other nations with different political and economic patterns may eventually want to field their own team of satellites, and they probably would be government-owned and controlled. We cannot imag-

ine Soviet Russia doing it any other way. But that would seem to be all the more reason for flying our American brand of private enterprise satellites through the new frontiers of space from the very outset. Here is one area where no future dictator, such as Castro, will be able to say, "Yankee go home!"

The Language Barrier

One of the most serious problems confronting world telephony, during this advent of an era of space communication satellites, is the language barrier. The technology of such space communications is moving along lickety split. But what good will it be in a shrinking world where 500 different languages are still spoken?

Is our technology outrunning our cultural progress in this area? It certainly is. We might conceivably cut the rate of an overseas call from New York to Cairo or Delhi to a small fraction of its present cost by means of satellite relays. But what good will that be if there is not more than a figurative handful of people at the other end of the wire who understand English—and vice versa, only a handful of people in New York who can speak or understand Hindi, or Arabic? The cost of a long distance call to Red China could drop from $10 to 10 cents and still have no takers among 600 million people who do not understand us, and couldn't care less.

Bilingual Education

So, it is a fair question to ask whether the telephone interests of the world, both foreign and domestic, will not be "all dressed up and no place to go" unless some kind of a program is not started soon, all over the world, to foster bilingual education at all grades of school—secondary and college, certainly, and even in elementary grades. In the rapidly shrinking world of mass communications this is an obvious "must" and who is doing any thinking about it?

The very possibility of a contest or race with Red Russia in this very area of communications satellite launching raises an important question of world politics. On Oct. 19, a world-renowned space scientist suggested that the United States may be losing the race to orbit world-wide communications satellites which could determine whether Russian or English will be the universal language. He said the communications possibilities of satellites are still "too dimly seen" and that "this payoff could be staggering." This was the view of Dr. James C. Fletcher of Space Electronics Corp., Glendale, Cal., who

(Continued on page 44)

AT&T Announces Plans For Satellite Relay System

AMERICAN Telephone & Telegraph Co. announced plans on Oct. 21 to put the first station of a satellite relay system into space within a year.

The station would provide for the experimental transmission of telephone calls, television, data transmission and other types of communication between the United States, the United Kingdom and continental Europe.

The company is now prepared to contract for the launching of the necessary satellites and to proceed with the construction of transmission and receiving stations on the ground, AT&T's Long Lines Department said in an application to the Federal Communications Commission.

The project would be financed and the facilities operated by AT&T, in coordination with telephone administrations abroad. This is similar to the practice for many years in handling overseas communications by cable and radio.

In the development of this project, the company expects to work closely with the National Aeronautics and Space Administration.

In addition to requesting approval of the satellite experiment, AT&T also asked the FCC for rule changes which would allow the company to proceed, following satisfactory tests, with the initial stages of commercial service.

"We are planning a system that would make use of solar-powered satellites orbiting at an altitude of about 2,200 miles," Henry T. Killingsworth, AT&T vice president in charge of Long Lines, said.

"Electronic amplifiers aboard the space stations would catch signals from earth, immediately boost and relay them on to ground stations in the United States, The United Kingdom and western Europe."

The proposed spheres would be 4 feet in diameter and weigh about 175 pounds. About 60 per cent of the surface would be covered by glass-coated solar cells. A metal skin and two slotted antennae would comprise the rest of the surface.

"We expect this initial system will be capable of transmitting up to about 35 minutes some three or four times a day—coordinated with the satellite passes over the earth station areas," Mr. Killingsworth said. "The satellites would act as microwave towers in the sky, performing the same boosting and transmitting functions as the microwave towers of our radio relay systems here on the ground."

The new project is a further step in the Bell System's fundamental space communications research program. It would employ "active" satellites, containing electronic devices to receive, amplify and send signals back to earth. An earlier phase of this program was Bell System work on "Project Echo," which employs a "passive" or reflecting satellite launched by the National Aeronautics and Space Administration.

"We believe that the commercial application of satellite communications is a job for private enterprise," Mr. Killingsworth said. "This new project is still another indication of our readiness to take on that job and pay our own way."

Bell scientists and engineers expect satellite communications will help answer a rapidly growing demand for circuits between the United States and other countries. Overseas calls this year will total some four million, double the number handled five years ago. AT&T estimates the number may be around 100 million 20 years from now.

To provide for such service, AT&T, in addition to its satellite plans, also is planning new ocean telephone cables with greater capacity than those already in use.

During the current "Echo" experiment, two-way voice communication has been established between Bell Telephone Laboratories' Holmdel installation and the Jet Propulsion Laboratories in Goldstone, Cal., using microwave frequencies reflected from the satellite. Tests also have been made with stations in the United Kingdom and France.

Data from this experiment, said Mr. Killingsworth, confirmed the views of the Bell System that broadband communication between continents, capable of transmitting large numbers of telephone calls and television, is now practicable by using microwave relay stations in space.

The step into space the telephone company now proposes would permit transmission of one TV program in either direction, or two-way transmission of telephone signals. Data transmission or other services could be substituted for these.

Private Enterprise Must be Strengthened, Pioneers Told

By R. C. RENO

AMERICA is on the road leading inevitably toward socialism and if the trend continues, this country's businessmen will find themselves sitting on curbs and dressed in patched and tattered overalls in 15 years, Dr. Nicholas Nyaradi, former minister of finance of Hungary, declared in an address before the annual meeting of the Independent Telephone Pioneer association, held Oct. 11, during the recent convention of the United States Independent Telephone Association.

Dr. Nyaradi, one of the outstanding speakers of the USITA meeting, is now an American citizen and director of the Institute of International Studies of Bradley University, Peoria, Ill.

Present Trend Dangerous

"If you think," Dr. Nyaradi said, "that this is an outrageous prophecy, then the only concession I am willing to make is that if the present trend continues, in 15 or 20 years all of you here will draw weekly meager paychecks from your state government or from our federal government in Washington, because America is heading toward socialism."

Dr. Nyaradi, drawing on his long experience with Russian officials while he was Hungarian finance minister, said this is what the Communists are waiting for:

"Khrushchev is a fanatic Communist who strongly believes that our country —sooner or later—will collapse from within, under what he thinks are our own internal difficulties and contradictions. He simply doesn't believe it is worthwhile for him to risk a shooting war when our country will be destroyed anyhow from within."

Labor Role Noted

Dr. Nyaradi said the trend is that American labor leaders are making a definite attempt to grab political power and political supremacy. He continued:

"Don't get me wrong, I am a wholehearted supporter of the American labor movement, which today is one of our strongest defenses against communism.

"However, what our wonderful friends in the labor movement seemingly do not know is that whenever and wherever labor has achieved political influence, either by creating its own political party or by infiltrating another political party, this has led inevitably — whether labor wanted it or not — to more or less socialistic institutions. It just cannot be otherwise."

Socialism, once achieved, is just as detrimental to labor as it is to business, he said, and whenever a labor party has taken over a country's government this has led inevitably to the destruction of the country's economy. He continued:

"What you as businessmen have to do is not start an anti-labor campaign, but stand up and tell the American people what business has done in order to make this country as strong and as healthy and as powerful as it is today. Tell them our economy is based on the system of checks and balances between labor and management and all you want is not domination but a fair share for yourself and your business. And if you don't do that, you're going to be in trouble."

Asks Support for Pioneers

The Pioneer meeting was presided over by President Berney Simner.

In his annual address, President Simner pleaded for support of the Independent Pioneer association by Independent operating companies in becoming associate members and in encouraging their employes to join. He said:

"Many thousands of dollars are spent each year in public, community and industrial relations, yet here is an organized force brought together in a common cause, cemented into a unit by loyalty and dedication to the principles of Independent telephony, and begging to be given only recognition and the opportunity to be of service to the industry.

"We do not seek subsidy in any form. We ask only for recognition by the operating companies of the fact that ITPA does exist as an organized body—or as it is stated in our original dedication—(to give) 'deserved recognition to men and women who have served the Independent telephone industry long and well.'

"Our companies should point with pride and satisfaction to their employes who are members of ITPA for certainly there is no finer evidence of personal security in the industry than those individuals of lengthy service."

Executive Secretary Mayme Workman, in her annual report, said the Pioneer association has a net gain of 408 members during the past 12

Officers and directors of the Independent Telephone Pioneer Association. Left to right, Ray Blain of Washington, D. C., vice president; Bertha M. Eaby of Ephrata, Pa., vice president; D. S. Guild of Honolulu, Hawaii; Sophia K. Davis of Springfield, Ill., assistant secretary-treasurer; F. H. MacGougan of Monrovia, Cal., president; Mayme Workman of Springfield, Ill. executive secretary and treasurer, and Berney Simner of St. Louis, Mo.

months, setting a new high in membership of 5,136.

The membership is divided as follows: Direct members, 1305; chapter members, 3,035; club members, 171; associate members 201; auxiliary members, 140, life members, 284.

Mrs. Workman also announced the formation of the National Capital Chapter, serving the District of Columbia area.

Among the resolutions adopted by the Pioneers was one commemorating the deaths of Pioneers during the past 12 months. Those whose deaths have been reported are:

Jacob Albrandt, Lincoln, Neb.; J. F. Allen, Webster Groves, Mo.; W. M. Angle, Rochester, N. Y.; A. L. Baker, Fairfield, Ia.; R. J. Beilsmith, Decatur, Ill.; K. L. Blizzard, Greenhurst, N. Y.; P. L. Bollinger, Ennis, Mont.; J. P. Boylen, Rochester, N. Y.; E. M. Burland, Jamestown, N. Y.; R. D. Buzzard, Erie, Pa.

J. A. Campbell, Cameron, W. Va.; J. A. Castor, Slippery Rock, Pa.; J. S. Cave, Columbus, O.; Addalene B. Christian, Lincoln, Neb.; G. E. Clifton, Monticello, Ill.; W. E. Cummings, Hastings, Neb.; A. J. Curren, Elyria, O.; L. E. Durham, La Jolla, Cal.; G. B. Foscue, Wilmette, Ill.; C. L. Frederick, Butler, Pa.

E. C. Gates, Minneapolis, Minn.; R. M. Green, Lincoln, Neb.; R. W. Hedrick, Jefferson City, Mo.; E. R. Hood, Portland, Ore.; J. A. Hope, Wilmington, Del.; R. B. Hunt, Honolulu, Hawaii; J. K. Johnston, Indianapolis, Ind.; R. K. Kanoho, Honolulu, Hawaii; C. J. Krotz, Chicago, Ill.; F. M. Lantz, Wabash, Ind.; H. O. Leinard, Cleveland, O.

T. L. Leonard, St. Louis, Mo.; R. F. Lucier, Warsaw, Ind.; Ella W. Mack, Columbia, Pa.; Leilani Mahoe, Wahiawa, Hawaii; J. L. Mathews, Statesboro, Ga.; H. B. McElyea, Oak Park, Ill.; H. B. McKay, San Francisco, Cal.; F. G. McLane, Russellville, Ark.; George Mehuren, Beaver Crossing, Neb.; P. J. Menzer, Marion, O.

Callie C. Markey, Strausston, Pa.; Atha Morris, Agnew, Cal.; T. H. Mote, Chicago, Ill.; Otto Newkirk, State Center, Ia.; A. J. Parsons, Springfield, Ill.; Ida E. Pitt, Lincoln, Neb.; J. L. Potter, Plattsmouth, Neb.; T. C. Scott, Sarasota, Fla.; Anna M. Seymour, Lincoln, Neb.; Clifford W. Shanbarker, Thorp, Wis.

J. H. Spengler, Clintonville, Wis.; F. M. Strasser, Lincoln, Neb.; H. M. Strosnider, Burlingame, Cal.; F. A. Sturm, Gallatin, Mo.; H. B. Surface, Greenville, O.; Emma E. Thompson, Paris, Ill.; James Thompson, Fort Smith, Ark.; W. E. Tiffany, Binghamton, N. Y.; W. M. Wingard, Jamestown, N. Y.

Pioneer Association Director D. S. Guild (center) presents certificate of appreciation to Berney Simner for his service as president of the association during the past year. Newly-elected president, F. H. MacGougan is at right.

The Pioneers elected the following directors: Ray Blain of Falls Church, Va.; J. N. Johnson of Fort Myers, Fla., and C. C. Pearce of Riceville, Ia.

Other directors are: Hugh A. Barnhart of Rochester, Ind.; Bertha M. Eaby of Ephrata, Pa.; D. S. Guild of Honolulu, Hawaii; F. H. MacGougan of Monrovia, Cal.; C. E. McCormick of Johnstown, N. Y. and Berney Simner of St. Louis, Mo.

The directors elected the following officers: President, Mr. MacGougan; vice presidents, Mrs. Eaby and Mr. Blain, and executive secretary and treasurer, Mayme Workman of Springfield, Ill.

The board of directors appointed Sophia K. Davis of Springfield, Ill. as assistant secretary-treasurer.

Convention Calendar

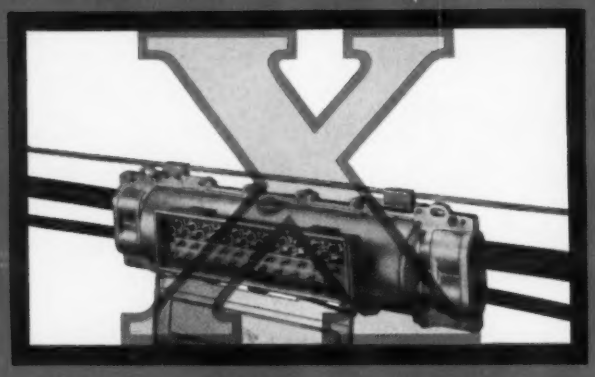
1960

Association	*Date*	*City*	*Hotel*
Alabama	Nov. 14 and 15	Birmingham	Thomas Jefferson
Florida	Nov. 28 and 29	Jacksonville	Robert Meyer

1961

Louisiana	Feb. 15, 16, and 17	Shreveport	Captain Shreve
Minnesota	Feb. 19, 20, 21 and 22	Minneapolis	Radisson
Kentucky	Mar. 7	Lexington	Phoenix
Texas	Mar. 12, 13 and 14	Houston	Rice
Iowa	Mar. 23 and 24	Des Moines	Savery
Nebraska	Apr. 5 and 6	Lincoln	Cornhusker
Mississippi	Apr. 17	Unannounced	Unannounced
Ohio	Apr. 18 and 19	Columbus	Deshler Hilton
Indiana	May 9, 10 and 11	Indianapolis	Claypool
Illinois	May 17, 18 and 19	Peoria	Pere Marquette
Kansas-Missouri*	May 22 and 23	Kansas City, Mo.	Continental
Pennsylvania	June 5, 6 and 7	Pocono Manor	Pocono Manor Inn
Washington-Oregon*	June 15 and 16	Victoria, B. C.	Empress
New York	June 19, 20 and 21	Schroon Lake	Scaroon Manor
California	June 26, 27, 28, 29 and 30	Honolulu, Hawaii	Hawaiian Village
Alaska	Aug. 21, 22 and 23	Palmer	Unannounced
USITA	Oct. 8, 9, 10 and 11	Chicago	Conrad Hilton

*Joint meeting



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Branch outlets on both ends

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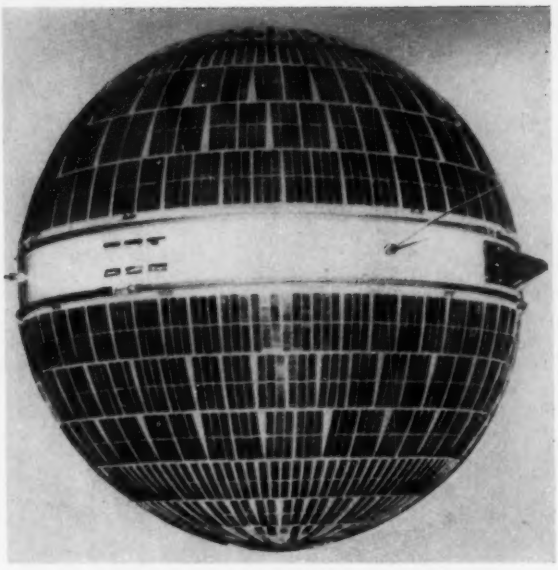


TOMORROW'S global communications through outer space were launched on Oct. 4, from Cape Canaveral.

The U. S. Army's Courier satellite is a communications experiment. The 500-pound, 51-inch successor to the SCORE satellite that carried President Eisenhower's 1958 Christmas message to the world can simultaneously receive and send 340,000 words—approximately three novels—in a five-minute period.

Courier was transferred to the U. S. Army in September, 1960 by the Defense Department's Advanced Research Projects Agency and was developed under the technical direction of the Army Signal Corps at the U. S. Army Signal Research and Development Laboratory, Fort Monmouth, N. J. It was successfully fired into orbit by a U. S. Air Force Thor-Able-Star missile. Unlike the SCORE, the Courier communications satellite separated from the missile. And different from its recent predecessors, the Department of Defense's Courier is not intended for navigation purposes or scientific measurements, nor is it on a reconnaissance patrol in space. It is out there expressly to test its ability to relay messages for communications between ground stations.

Courier can send approximately 68,000 words a minute and receive and store the same amount simultaneously. Thus, the Courier satellite now in orbit has a capacity to handle 3,400,000 words a day—nearly equivalent to the daily news wordage handled by America's major news services.

This would include all transcontinental main news trunks, financial, sports and special-purpose wires, regional and state loops and the transoceanic underwater and radio-teleprinted circuits of the foreign services. A major newspaper wire service has estimated its daily wordage movement to total 1,500,000 words.

If it were desired to gear the ground stations for the maximum high-speed use of which Courier is capable, this wordage would equal nearly 465 pages of solid newsmatter of a standard eight-column newspaper size. It can communicate with two stations, one in Puerto Rico and the other at Fort Monmouth. Commands to the satellite are coded to avoid unauthorized use of its communications capabilities during the experiments by the Army Signal Corps. Courier's electronic equipment weighs 300 pounds. The Army's satellite payload was built by Philco Corp., Philadelphia. The special 28-foot dish-shaped tracking antennas in operation at Fort Monmouth and Puerto Rico were designed by Radiation Inc., of Melbourne, Fla., and the ground receiving, transmitting and control equipment was built by International Telephone & Telegraph Laboratories, Nutley, N. J. The companies and their subcontractors worked under the technical direction of the Army Signal Laboratories.

Courier is known as a "delayed repeater," meaning it stores information until commanded to transmit rather than relaying it directly. When it is in range of a ground station, it can receive 340,000 words in a five-minute period. This information is stored on tape recorders in the satellite and transmitted to the next station. While this large amount of material is being transmitted to the ground station a like amount of message traffic is sent up to Courier for relay to the next station.

As Courier approaches a ground station, it is detected by a specially built 28-foot dish-shaped antenna, which automatically locks on and tracks the satellite until it is out of range. Although it will remain in range considerably longer, the actual exchange of information takes only four minutes. The added time is used in acquiring and recording important data on the operations of the satellite equipment, which is made available on a separate telemetry link.

Despite its comparatively great weight, Courier is a triumph of miniaturization, using printed circuits, tiny modules and transistors. It contains only four conventional vacuum tubes—for the microwave circuits—and 1,300 transistors. Power is supplied by 19,200 solar cells, whose first satellite use was by the U. S. in the Army Signal Corps' solar convertors on VAN-

Via COURIER

This article was transmitted via the Army's Courier satellite now circling the earth. The text was sent by high-speed teletype from Ft. Monmouth, N. J., to Courier 1-B on Oct. 14 at 0305 Eastern Daylight Time on the satellite's 129th pass. It was received on the satellite's 131st pass at the U. S. Army Carribean Signal Agency's space communications center at Salinas, Puerto Rico, at 0658 Eastern Daylight Time the same day, and was returned via ordinary teletype circuits.

GUARD I. These cells convert sunlight into electricity to power radios and other equipment during daylight operation, and to charge miniature nickel cadmium batteries for operation when the satellite is in the earth's shadow.

The transistors, batteries, tubes and other parts are housed in 33 "black boxes." Messages are sent and received on short, omni-directional antennas protruding from the sphere, while those used for telemetry and tracking are received on flexible whip antennas.

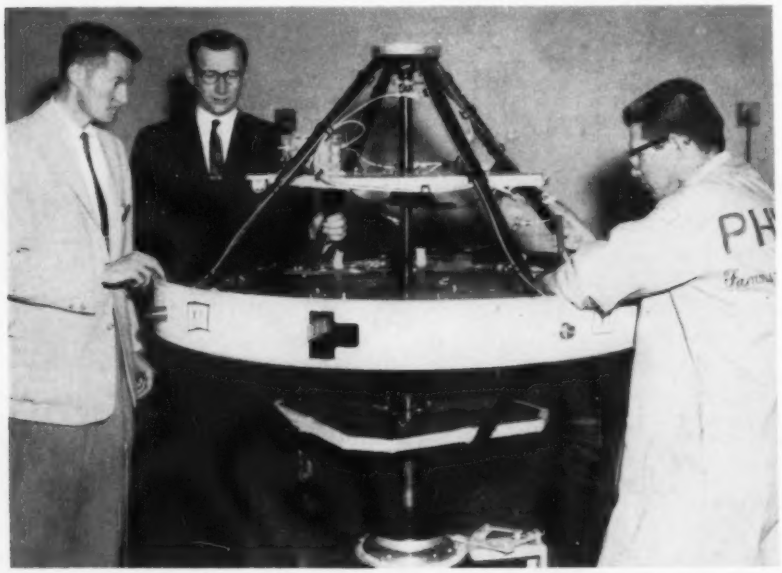
Courier is the forerunner of a series of communications satellites that could revolutionize world-wide communications. As an experimental research and development vehicle, it used frequencies in the ultra-high range, never before used for satellite communications. The use of this band has several advantages. It is a relatively unused part of the radio spectrum and thus free from interference by other man-made signals. It is also not disturbed by natural causes such as magnetic storms which can blanket the lower frequencies.

Several Couriers could greatly relieve the currently crowded radio spectrum and avoid the inherent limitations of transoceanic cables. Courier would not interfere with present television and radio operations, which are on much lower frequencies. It is, therefore, seen as a practical forerunner of global communications which can be expected in a few years.

Epoxy Fiberglas shells are mounted on dummy structure to check fit of parts. Wooden mock-ups are used to determine exact location of the 38 "black boxes" making up the Courier payload.

With regard to Courier's operational phase, one of the principal factors in planning for the employment of satellites has been compatibility with present and planned communication systems. The mode of operation of the Courier satellite is consistent with the present method of handling record traffic in the Army world-wide communication system. Essentially, this method now provides for a complete service by communications organizations, whereby a message is successively relayed through communication centers until it is delivered to the addressee. The Courier satellite will be incorporated as a "means" at the disposal of certain communications stations for the relaying of messages.

Several presently operating ACAN communication centers will be equipped to utilize the Courier satellite. These stations will be selected on the basis of providing world-wide communication coverage. At least one station will be designated for each area of major military activity. Illustrative of a system, four stations located at Asmara, Philippine Islands, Puerto Rico, and Honolulu can be considered. These stations will act as gateways to the general areas in which they are located. As gateways they will distribute messages throughout their respective areas via the satellite. A Courier satellite will



John Burt (left) of the U. S. Army Signal Research and Development Laboratory of Ft. Monmouth, N. J., and Gerald Moore, Philco satellite project manager, center, inspect a receiver and a transmitter mounted on the inner structure platforms of the Courier communication satellite. Ronald Weathers, Philco technician, attaches cable. Various pieces of electronic equipment are mounted on both sides of the three platforms.

orbit near these stations and can be used as the means of transmission for low priority communiques. One orbiting Courier communications satellite would be capable of handling the low priority traffic requirements as projected through 1963.

The Courier satellite will have a minimum useful life of at least one year. To provide adequate coverage, an altitude of approximately 2,000 miles is required. From this altitude, the satellite will have a potential coverage (line of sight) of approximately 3,000 miles. The *effective range* will be limited by signal to noise characteristics of the system.

The communication center at the ACAN stations equipped with satellite ground facilities will consider the Courier satellite as just another trunking means; however, special preparations for the use of this means will be necessary since it will be available only six minutes out of each orbital period. Prior to the arrival of the satellite, the communication center must load the ground recorder with traffic to be released. The communication center must also be equipped to distribute received messages prior to receipt of another batch from the following satellite pass to prevent backlog buildups. The semi-automatic approach planned immediately will revert to full automatic with installation of the Automatic Message Exchange visualized as a component of the UNICOM system. The ground facility will be made up of two major components; these being the radio component consisting of tracking, recording, transmitter-receiver equipment and satellite control devices, and the message processing component which consists of paper tape equipment.

The operation of the satellite will be fully automatic. Receipt of signals from the beacon transmitter of the satellite will trigger off a sequence of operations whereby the command coder will activate the satellite station, conditioning one recorder to transmit and the others to receive. Messages stored on the ground will be released to the satellite. Assuming that four ground stations will comprise the Courier communications satellite system, four recorders will be required in the satellite, one recorder allocated to each ground station. All messages for any given ground station will be recorded on the recorder designated for that station. A spare recorder will also be carried by the satellite and will be available in case of malfunction or for an additional ground station. The recorder conditioned to transmit will contain all the messages destined for that ground station activating the satellite. These messages will be received at the ground station and recorded in a magnetic storage device.

This "Space-Photo" of four of the men directly responsible for the success of the Army Courier communications satellite, at the ground control console, was sent from the U. S. Army Signal Research and Development Laboratory's Fort Monmouth ground station to the satellite, received and retransmitted back to Fort Monmouth through a combination of the satellite's regular communications equipment and the laboratory-developed facsimile equipment. The entire relay process took about five minutes, from insertion of the photograph in the facsimile machine to the Polaroid printing of the relayed picture. In the picture above, standing: George F. Senn (left), USASRDL Courier project director; and Pierce W. Siglin, project manager; seated, Samuel Findler (left), ground station manager, and Walter P. Teetsel, in charge of all ground sites.

Preparation of messages and data for transmission to the Courier will be accomplished within the two-hour periods between satellite passes. Similarly, all messages received from the satellite will be processed through the communication center within the same two-hour period. To accomplish this with no change in station operating procedures, high-speed paper tape equipment will be utilized. The use of punched, typed paper tapes will make the Courier satellite system fully compatible with the worldwide communication system.

Paper tape transmitter-distributors (t-d), operating at 750 words per minute, will be used to load outgoing messages from a "send via satellite bank" in a magnetic storage device. Five or eight-hole tape will be accepted by each t-d for teletypewriter and data, respectively. These messages will be segregated by addressed ground station in the process of storage to simplify design and operation of the satellite package. The magnetic storage device will consist of a bank of magnetic tapes (one for each addressed ground station). Although a range of speeds will be possible, initial speeds will be 600 bits/sec (record) and 25,000 bits/sec (read). Under programmed control an automatic switch will sequentially step through each of the recorders in releasing traffic for transmission to the satellite.

The "receive via satellite" bank will consist of 750 wpm typing reperforators (t-r) in sufficient quantity to handle the incoming traffic load for each station. The magnetic recorder used to store received messages will read the messages into message processing equipment at a rate of 2,500 to 6,000 bits/sec. The message processing equipment will buffer the messages to a speed of 600 bit/sec (750 wpm) on each output device. In addition to buffering the message, processing equipment will separate messages having an eight-bit information code. One t-r will produce eight-hole punched paper tape whence it will be converted to punched cards and retransmitted via card transceiver equipment. Teletypewriter messages will be manually segregated and retransmitted over conventional 100 wpm teletypewriter equipment in those communication centers employing semi-automatic tape relay procedures. Segregation and retransmission of teletypewriter messages will be accomplished automatically at those ground stations where Central Office, Teletypewriter, AN/FGC-30 will be in use.

(Continued on page 43)

Geneen Asks Sound Climate for U.S. Foreign Investment

ITT president, in open letter, tells Presidential candidates government policy must help citizens feel safe in investing in U. S. enterprises abroad.

H. S. GENEEN

RECENTLY, Sen. John F. Kennedy, in one of his campaign speeches, described a "solid gold telephone" which The Cuban Telephone Co., subsidiary of International Telephone & Telegraph Co., was supposed to have given to the Cuban dictator, Batista, as a symbol of "excessive" rates of return earned by ITT.

In an open letter, addressed to both Senator Kennedy and Vice President Nixon, ITT President Harold S. Geneen not only refuted Senator Kennedy's remark about the "gold" telephone, but pointed out to both Presidential candidates the need for our government to maintain a healthy climate for U. S. investment abroad.

The full text of Mr. Geneen's letter to Senator Kennedy and Vice President Nixon follows:

"This is an open letter addressed to both of you as candidates for the Presidency of the United States. Copies of this letter are being made available to the press on Thursday, Oct. 13.

"It is not for us to determine the matters discussed in the current series of debates between Vice President Nixon and Senator Kennedy. However, as one of many companies with a healthy stake in business around the world, we are disturbed about the apparent lack of understanding, as evidenced in statements made to date by both candidates, of the need to maintain a healthy climate for U. S. investment abroad. Perhaps tomorrow's debate will throw some light on this issue.

"For example, Senator Kennedy spoke last week about a 'solid gold telephone' that our subsidiary, The Cuban Telephone Co., was supposed to have given Batista. He described this telephone, which he said was on display in a Havana museum, as a symbol of 'excessive' rates of return we earned.

"At the same time that we are being exorcised about our investments in Cuba, Vice President Nixon talks about the need to double or triple the level of our private investments abroad in under-developed areas, and Senator Kennedy in spite of his comments last week also urges an increase of private investment overseas.

"Acknowledging the sincerity of both candidates in their expressed desire to see U. S. private investments grow in under-developed parts of the world, we must assume their agreement on the importance of a clear understanding of what is really required to achieve that growth.

"We feel it is not going to be achieved by talking about gold telephones or round sums of money running into the billions. What is required is a government policy that will help the U. S. citizen feel safe in putting his dollars to work in U. S. enterprises abroad.

"Our experience in Cuba is perhaps worth highlighting because it illustrates the point.

"In Senator Kennedy's reference to the 'solid gold telephone' displayed in Havana, he stated that it was presented to Batista by the Cuban Telephone Co. as 'an expression of gratitude for the excessive telephone rate increase which the Cuban dictator had granted at the urging of our government.'"

"While a minor point, the telephone in question was not solid gold, it was gold-plated, and it was not presented to Batista. The fact is, it was a gold-plated replica of the gold telephone set presented by International Telephone & Telegraph Corp. in November of 1930 to His Holiness, Pope Pius XI, commemorating installation of telephone service in the Vatican.

"This replica was made available by ITT in 1957 for an exhibit arranged by the Cuban Telephone Co. in the Palace of Fine Arts in Havana, and it was returned in January of this year with the thanks of the current Cuban government.

"Coming now to the more important issue, we operated the Cuban Telephone Co. for 38 years. During that entire period our average rate of return was approximately 4 per cent. This was considerably less than telephone companies are permitted to earn in the United States. Even after the Batista government granted increases in 1957, the assured return to the company did not exceed the range of rates allowed for telephone operations within the United States, despite the real risks as evidenced by recent events. This can hardly be considered excessive.

"The world-wide family of companies comprising ITT employ approximately 110,000 nationals who are old hands at helping under-developed areas in the communications business, and they have been hard at this work for over 50 years.

"In the case of Cuba, we put approximately $5.00 back into that country's economy for every dollar we took out during the time we operated the company. At the time the property was taken from us, we were well along on a 60-million-dollar expansion program.

"Our reward for these 38 years of operation, in which we heavily invested in Cuba to provide more telephones for more Cubans, was the seizure of our property without any compensation whatever.

"In the face of statements by both candidates that we need more investment abroad, it seems clear to us that if our government pursues short-sighted policies toward overseas investments; if it criticizes and second-guesses, as Senator Kennedy did last week; if it fails to see that our private investments are treated fairly by foreign nations, then — the additional billions which both the vice president and the senator would like to see poured into such enterprises will have to come com-

(Continued on page 43)

TELEPHONY'S ELECTRONICS SECTION

BY PAUL E. MURPHY, ELECTRONICS EDITOR

HIGH-SPEED DATA TRANSMISSION

THE president of General Telephone & Electronics Corp., Don G. Mitchell, in addressing the recent annual meeting of the Instrument Society of America, cited the electronic computer as "instrumentation's greatest promise for the solution of complex industrial problems."

It is because of the great potential of the computer, cited by Mr. Mitchell, that we in the telephone communications business must find more advanced concepts of transmitting the proper information at the proper instant from remote locations to a centralized computer.

In line with this thinking, we have, in this section, attempted to keep you abreast of any new developments and applications in the data transmission art.

Most recently, a high-speed data communication system, utilizing Stromberg-Carlson's Model 301 Transceiver, was placed into operation by the Convair Division of General Dynamics Corp. The system is used to link the Divisions' facilities in Pomona and San Diego, Cal., some 200 miles separated.

The data communications system was designed and built as a new product of the Stromberg-Carlson Division, a sister company. The system is said to be capable of transmitting information at a rate of 2400 bits per second. This is at a speed more than 30 times that of the conventional teletypewriter.

Using a regular telephone facility more than 200 miles long, information is transmitted from the plant at Pomona to computer facilities at San Diego for processing.

In operation, punched cards containing the input data are fed into a card reader with the transmission logic of the system taking the readout information, converting it to a serial train of binary pulses. Check bits are added with this information, and the data modulated for transmission over the telephone facilities. At the receiving end the signal is demodulated, checked, and the resulting data recorded on magnetic tape for entry to the computer equipment.

It was stated, "Experience indicates an error rate of less than one error in one million bits transmitted, and even these errors were detected by the system logic before entry of the data into the computer."

At Convair's computer, in the San Diego, Cal. plant, magnetic tape is prepared to receive data from the company's plant at Pomona, 200 miles distant. It was announced by Stromberg-Carlson, who built the system, that data can be sent and received at a rate of 2400 bits per second.

PROCEEDINGS OF AIEE

AT THE fall general meeting of the American Institute of Electrical Engineers, held at Chicago, many papers were presented on communications concerning the telephone industry. One of the abstracts from these proceedings may be of interest to many of you telephone people.

H. E. Curtis and T. R. D. Collins, both of Bell Telephone Laboratories, and B. C. Jamison of American Telephone & Telegraph Co., described a new means of doubling existing TD-2 microwave facilities for intercity usage from the present limit of six channels to 12 channels.

It was explained that the TD-2 system, which operates in the 3700 MC — 4200 MC band, has been used since 1950 for intercity television and telephony, but that by 1958, it had become apparent that six radio channels would not be adequate to take care of the wideband channel needs. The new method was described as an "interstitial" method, whereby the spacing between radio channels is reduced to allow the greater number of radio channels to be allocated.

In describing some of the facets of operation, it was stated, "It is planned to operate the interstitial channel added on a route as a system separate from the existing regular channels. The interstitial channels will have their own protection channels because adjacent channels

20 megacycles apart will frequently fade at the same time, and would simultaneously need the same protection channel."

Other than increasing the size of buildings and increasing the size of existing power plant, it was explained that the TD-2 channels on interstitial routes will operate in a normal manner as existing TD-2 systems.

OPTICAL MASERS

A DEVICE known as an optical maser has been used in recent experiments in long distance communications at Bell Telephone Laboratories. The solid state maser has been used to transmit pulses of light from the Laboratories locations at Murray Hill, N. J., and Holmdel, N. J., approximately 25 miles.

It is said that the device produces an extremely narrow beam of light which has an intensity greater than a million times that of the sun itself. The coherence of the beam of light is such that it could be used to transmit various intelligence from one point to another.

It was reported that the heart of the maser is a synthetic ruby, 1½ inches long and ⅛ inch in diameter, the two ends of which were polished until flat and parallel. The two ends were then covered with a thin silver coating, thin enough to be transparent. The rod was then placed into the center of a spiral-form photoflash lamp and supported. The ruby rod was then illuminated with an intense flash of white light.

The experimenters of the Laboratories found that when the illumination of the flash lamp reached a certain power, a parallel beam of light was emitted through the transparent silvered ends of the ruby. It was stated that the light was red as the ordinary fluorescent light from the ruby, but differed in many respects.

In one manner, the light was said to be more monochromatic, that is, more of a single color (a single frequency) than the light from the ordinary ruby.

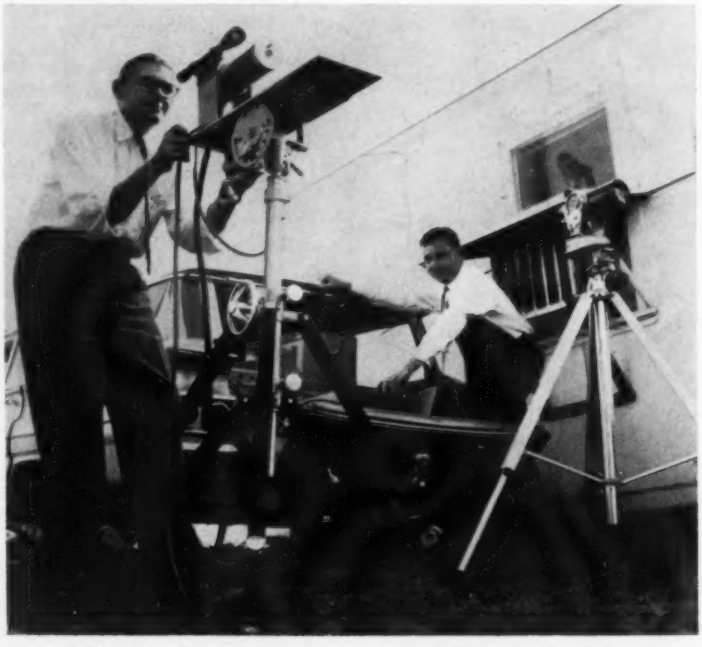
Secondly, almost all of the light was emitted in the shape of a cone of only one-tenth degree.

Third, the light was "coherent," or of a single phase.

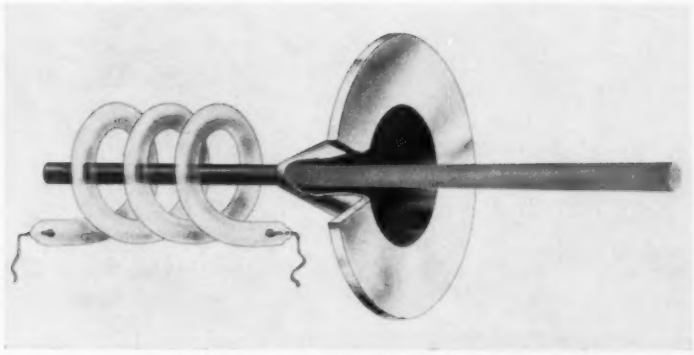
In addition to the observations, which were previously suggested in U. S. Patent 2,929,922, by A. L. Schawlow of the Bell Laboratories, and C. H. Townes of the Institute for Defense Analysis, the light was found to be emitted in short bursts of nearly a millionth of a second in duration. It was further explained that with the existing flash lamp, maser action could be sustained for a period of time approaching one-thousandth of a second, a period in which several bursts of monochromatic light can be observed.

It was reported in the communications experiments that light was emitted from the Holmdel site to the Murray site, some 25 miles away and that the light flashes were visible to the naked eye, and were registered on a photomultiplier tube. The circle illuminated at Murray Hill was only 200 feet in diameter.

Other than these experiments,



R. J. Collins (left) and W. S. Boyle of the Bell Telephone Laboratories line up an optical maser prior to an experiment carried on between Holmdel and Murray Hill, N. J., some 25 miles apart.



An optical maser emits an intense beam of light, more than a million times brighter than the sun. Bell Laboratories experiments indicated that the optical maser might be used in communications as well as in a variety of scientific applications.

pulses of light have been transmitted along ¼ mile of 2-inch-diameter circular waveguide in which dust and fog of the atmosphere could not attenuate the beam of light. Photomultiplier tubes placed at the waveguide terminal recorded clear pulses of light.

According to W. S. Boyle of Bell Laboratories, messages can only be sent in code form based on repeated flashes of light. However, it was explained that since the "coherent" light is emitted in short bursts rather than a continuous beam, it may ultimately be possible and natural to carry on many television programs and many telephone conversations simultaneously.

FORWARD SCATTER STUDY

THE National Bureau of Standards has announced the development of a new antenna which is to be used in the study of the ionospheric phenomena. It is said that the antenna which has no mechanical moving parts is capable of scanning a 42-degree azimuthal arc and can determine immediately the direction of radio signals received from a forward scatter transmitter located many miles distant.

It was reported that personnel of the Antenna Research Section, Radio Systems Division, have erected a row of seven 5-element Yagis' at Table Mesa, a field station of N.B.S., directed along a circle path to the N.B.S. Long Branch field station transmitter in Havana, Ill., some 800 miles away.

It was explained that the scanning system was electronic and swings a 5.8-degree beam in azimuth, 20 times a second, through a 42-degree azimuthal sector—a new concept, when one thinks of the mechanics presently used for the sweep of radar antennas.

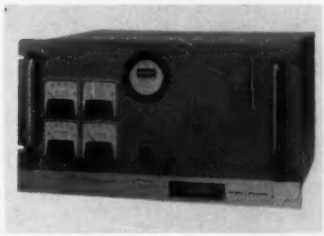
Further development is underway to permit a beam width of only 1.5 degrees by increasing the number of elements to 25, it was reported.

The new antenna, in addition to determining the direction of forward scatter, is expected to find use as a small-space, multi-direction antenna for receiving, obtaining immediately bearings of ionized meteor trails, and many other uses of the various space research programs.

TRANSISTORIZED INVERTORS

POWER Sources, Inc. has recently disclosed the development of a new line of transistorized-regulated semi-wave invertors.

Designated as the Sineverter Line, various models are currently available with either dc input voltages



The Sineverter developed by Power Sources, Inc. is a completely transistorized-regulated unit for deriving ac output voltages from a dc source.

of 23.5 — 28.5 and 47.0 — 57.0 volts and having an ac output of 117 volts at 60 cps at 250 to 1000 volt-amperes.

It was announced that each of the units utilizes a newly developed circuit which cannot be damaged by overload, short circuit, or open-circuit operation. No fuses, relays, or cutout protection is used; and the unit is said to return to normal operation immediately on removal of the fault. For continuous duty at full load, maximum line at 40 degrees C ambient air temperature, a newly-designed, self-convection cooling system is provided.

Each model is designed for stand-

ard 19-inch relay-rack-type mounting. Chassis depth is 15 inches for all models with the vertical space requirements varying from 8¾ inches to 17½ inches depending upon the model.

"THE WIZARD ROOM"

THIS IS THE name given to a large area in Bell Telephone Co. of Pennsylvania's accounting building at Conshohocken, Pa. It is to become the location of a large-scale electronic data processing proving grounds for the Bell System to determine the feasibility of such a machine for the billing and collecting job. Selected for the trial is the IBM 7070 computer, which is expected to be delivered and placed into service this year.

In a recent article appearing in Bell of Pennsylvania's magazine, R. C. Bechtel, assistant comptroller-mechanization, described the process of "Handling the Billing and Collecting Job."

In order to "computerize" the billing job, all documents to be used as input for the system must be converted into a form which can be "read" by a machine. Automatic message accounting paper tape and mark-sensed toll tickets are already acceptable input. In Conshohocken, punched remittance cards are now being forwarded with each customer's bill, and when they are returned with his payment they will provide machine language input for the system. Transmission of service orders by teletype will provide a punched-paper tape for machine input of all service order changes. Other data will be key-punched in cards for input into the system.

Conversion of these paper tapes and punched cards into high-speed magnetic tape will be accomplished by two IBM 1401 "satellite" computer systems. They will also prepare the printed output from magnetic tape on high-speed printers.

Data on the reels of magnetic tape will be sorted, rated, summarized, assembled, posted and prepared for billing at high speeds on the main IBM 7070 computer. Records for all customers served by the accounting office will be contained on large files of magnetic tape.

It is expected that many benefits will be accrued from the electronic data processing, including cost reductions in both accounting and commercial departments, an earlier release of bills with quality of billing service much improved, issuance of reminder and denial-of-service notices based on formulae developed by the commercial department, and memoranda issued automatically to commercial on subscribers requiring special collection attention.

It is to be observed that this operation is large-scale, in that the Conshohocken accounting office handles approximately 300,000 subscriber accounts and the processing equipment used here would not be feasible for many medium-sized and small Independent telephone companies. It is to be observed, however, that as this art of "computerizing" advances, many of the Independent company operations, which are being performed manually today, will be economically performed by machine tomorrow.

ELECTRONICS BOOKS

ELECTRONIC BUSINESS MACHINES

J. H. Leveson, 272 pages; $15.

Computers of one type or another are being used throughout the telephone industry and in the future more extensive usage of this machinery will be applied.

Whether or not to install a computer to do a job or a variety of jobs is a decision that must be made by the executive, the accountant, or other responsible management personnel. This text should prove invaluable to those faced with making these decisions by providing answers to such questions as: What are computers and how do they work? What type of function will they perform? What factors must be borne in mind when considering the introduction of a computer into the business?

The text is based on a series of lectures given at Dundee Technical College. There are three main parts to the text including: Programming for Business Purposes; Business Management and Electronic Data Processing; and Computer Equipment and Application.

This book is available through TELEPHONY.

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MAGNETIC AMPLIFIER — PRINCIPLES AND APPLICATIONS

By Paul Mali; 112 pages; soft cover, $2.45.

A considerable amount of equipments containing electronic circuitry for control and operation makes use of magnetic amplifiers. In order to properly and sufficiently understand and maintain these equipments, one must acquire a fundamental knowledge as to the theory of operation of these circuits.

This book has been written because of a need to make available such fundamental concepts. It is intended to provide technicians, electrical draftsmen, students, and others interested, an understanding and an application of magnetic amplifiers. Although some mathematics is introduced, extensive use of mathematics is limited for a

simpler and more fundamental presentation.

The text starts with a review of magnetism, electromagnetism, and magnetic circuits while later chapters discuss saturable reactors, three-legged core magnetic amplifiers, compensating magnetic amplifiers, polarized magnetic amplifiers, amplifier gain, and feedback. Final chapters then elaborate on general uses and construction, maintenance and troubleshooting, and application. A glossary is included for ready reference to technical terminology.

This book may be ordered through TELEPHONY.

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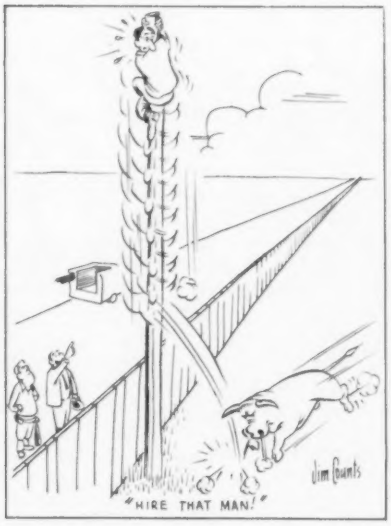
Application of Electronic Measuring Instruments

IN RESPONSE to numerous requests, Hewlett-Packard Co. has prepared a complete index of some 40 application notes which will be of interest to users of electronic measuring instruments.

A brief study of the index will suggest to the reader which of the numerous application notes are of interest to him, and then he can obtain the notes by contacting the company or its nearest representative.

The notes describe electronic theory, measurements, and application of Hewlett-Packard instruments. Typical subjects covered are traveling wave amplifiers, solid state devices, and masers; various frequency, microwave, and current measurements; applications for oscilloscopes and oscillators.



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Rocky Mountain Group Looks At Space Age; Politics

By Dianne P. Drucker

Major O. Frank Wolff, executive officer of the command office of information, North American Air Defense Command, focused the spotlight on defense in his recounting of "The NORAD Story" at the Rocky Mountain association's convention.

THE SPACE AGE in communications and the need for businessmen to become vitally interested, and active, in politics on a grass roots level shared top billing at the Rocky Mountain Telephone Association's convention held on Sept. 14 through 16 in Denver.

C. A. Blakeney of Carlsbad, N. M. presided over the meeting which had 245 registrants representing 41 Independent companies and 44 other companies and organizations.

The conventioneers were given a guided tour of the future by E. C. Aaberg, vice president and general manager of the Mountain States Telephone & Telegraph Co., Salt Lake City, in his speech, "A Look Ahead in Communications."

Mr. Aaberg forecast that by 1975 there will be 60 million more Americans and, that during that time, there will be a substantial increase in the number of people 20 to 34 years old, the age when new households are formed.

This will lead, he predicted, to a tremendous demand for housing, with housing starts averaging about 2 million a year in the 1970's, almost twice as many as now. Also, population will be concentrated in metropolitan areas, particularly in the suburbs of these areas. These homes of the future will be larger than the present average, Mr. Aaberg stated, in commenting on studies which have been made.

Turning to the make-up of the population, he described citizens of the future as having more education. As a result of this education, and an improvement in the standard of living, Americans will be in the market for a wider variety of goods and services, he said. Less will be spent on basic necessities, more on optional products. The consuming public will also be more discriminating in what they buy, looking for more tasteful products with better designs.

Mr. Aaberg sees this growth in population and refinement of tastes as creating a great deal of new business for telephone companies—not only in providing these new homes with basic service, but with a wide variety of services.

Going along with these changes, one item which seems bound to remain as volatile as it has been is inflation. The telephone business vitally needs improved earnings, he stated, to keep itself healthy in spite of this inflationary spiral.

Perhaps, he said, the telephone industry itself is at fault for not telling its story any better. He asked:

"How did the idea get started anyway that 6 per cent was a fair return for the telephone business? Why do we go along with this per cent theory? What's right about it?

"These figures were picked by regulatory bodies in a day when costs were a good deal lower—and in a day when relatively stable prices were probably the chief monetary and fiscal goal of the federal government. In a continuing inflation, 6 per cent just won't do. There's been talk about the virtue of stable prices, but prices have continued to rise even during periodic business recession periods."

Taking an average figure of 1½ per cent per year for inflation, a loaf of bread which in 1955 cost 18 cents would cost 34 cents in 1980; milk which was priced at about 23 cents per bottle in 1955 would be 40 cents by 1980. Mr. Aaberg stated: "Regulatory bodies must keep pace with the times to allow utilities to keep abreast of this inflation."

The future will also call for an increase in communication channels between continents, he predicted, because of a large volume of customer calling all over the world, and the need for additional facilities to aid national defense.

Contrasting land long-distance talking channels and overseas circuits, Mr. Aaberg pointed out that our total land network provides more than 244,000 intercity voice channels and we are adding more every day.

However, our telephone circuits to England number 57; to France, 21; Germany, 19; and Italy, 8. There are even less between the United States and continents other than Europe.

Satellite communications, although not yet completely proven in, are a potential source of increased numbers of talking channels. A single system, he said, might provide 500 to 1,000 new circuits across the ocean.

However, the use of satellites, Mr. Aaberg commented, will not mean that all communications will be through space. The two kinds of systems, land and space, will complement each other.

At the end of his talk "The Big Bounce," a picture on the Echo Project, was shown.

Continuing on the space age theme, Don P. Herron, director of information services for the Martin Co., Denver Division, spoke on "The Titan Program."

Keeping the conventioneers looking skyward, Major O. Frank Wolff, USAF executive officer of the North American Air Defense Command, Colorado Springs, Colo. chronicled "The NORAD Story."

(Continued on page 33)

this is the new

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telephone

BY AUTOMATIC ELECTRIC

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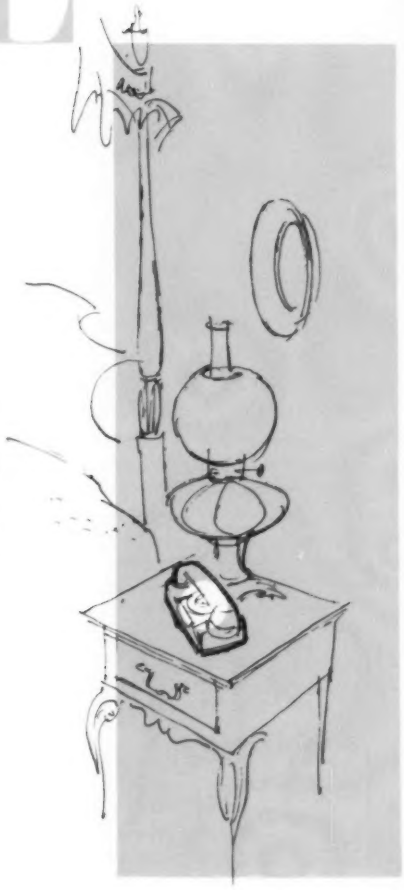
STARLITE



STARLITE'S dial light shines years longer

That's because of its electroluminescent light...an exclusive feature of the Starlite. There's no filament to burn out as in an incandescent lamp, so it doesn't have to be replaced every few months. No heat is given off, either. And it costs only a penny or two per year to operate. What's more, the dial light can be turned from soft to bright whether the handset is *on* or *off* the hook.

STARLITE holds its place.

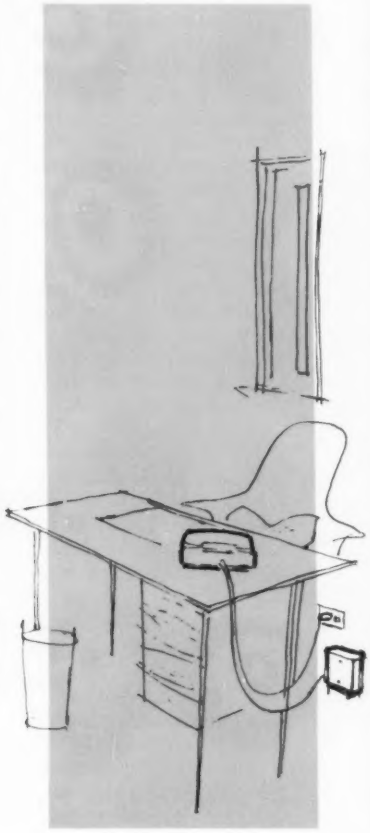
Only the Starlite telephone has a rubberized cork pad covering the entire base. This material produces a great amount of friction—resists movement when the suscriber dials. A new handset cords helps, too. It has a soft pull and extends full length with hardly any tension.

STARLITE is an original design.

It's rectangular in shape and less than half the size of a regular phone. The handset blends with the housing to form a low silhouette and unified design. A recessed area below the dial plate provides a handy pick-up grip. Six sparkling colors to please your subscribers: white, ivory, beige, pink, blue and turquoise.

STARLITE uses a standard 3-conductor line cord.

Current for the dial light comes directly from a 110V AC outlet through a *separate* cord into the Starlight. A resistor arrangement within the phone automatically limits the current, meeting UL requirements. You'll find the Starlite easy and convenient to install. It can also be equipped with a standard plug for portability.



STARLITE can be a main station, too.

With our new miniature ringer box, Starlite can be a main station—or a ringing extension. The new wall-mounted ringer box measures only 5¼″ long, 5¼″ wide and 2$\frac{1}{16}$″ deep. It houses a high-impedance ringer, either straight-line, harmonic or decimonic—in any standard frequency. Available in Starlite's six colors for a perfect match.

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1. SELECT THE PHONE	ORDER NO.
Type 182 (Starlite), color, with coiled cord	NB-825
2. ADD YOUR DIAL*	
Dial with 1-0 number plate	A
Dial with ABC number plate	C
3. ADD YOUR COLOR	
Sand Beige	B
Classic Ivory	E
Turquoise	G
Forget-Me-Not Blue	K
Gardenia White	L
Camellia Pink	M

Example: If you wish a Type 182 in Sand Beige with ABC number plate, your complete order number would be: NB-825-CB

Size: 8½" x 4¼" x 4¼"

Standard package of 6: Shpg. Wt. 24 lbs.

Standard package of 12: Shpg. Wt. 48 lbs.

**Also offered with SATT dial*

To order compact ringer box (L-1508-XXX)

CHOOSE COLOR OF RINGER BOX	ORDER NO.
Sand Beige	B
Classic Ivory	E
Turquoise	G
Forget-Me-Not Blue	K
Gardenia White	L
Camellia Pink	M

Example: If you wish a Compact Ringer Box in Sand Beige, your order number would be: L-1508-XXXB.

RINGER MUST BE ORDERED SEPARATELY

Straight-line, less adjustment wheel	D-56548-ASLR
16.6-cycle harmonic	D-56548-A16R
20-cycle harmonic or decimonic	D-56548-A20R
25-cycle harmonic	D-56548-A25R
30-cycle harmonic or decimonic	D-56548-A30R
33.3-cycle harmonic	D-56548-A33R
40-cycle decimonic	D-56548-A40R
42-cycle harmonic	D-56548-A42R
50-cycle harmonic only	D-56548-A50R
50-cycle decimonic only	D-56548-A51R
54-cycle harmonic	D-56548-A54R
60-cycle decimonic	D-56548-A60R
66-cycle harmonic	D-56548-A66R
66.6-cycle harmonic	D-56548-A67R

AUTOMATIC ELECTRIC
Subsidiary of
GENERAL TELEPHONE & ELECTRONICS

CIRCULAR 1966 45M 10-60 McK

PRINTED IN U.S.A.

NORAD is the first two-country (U. S. and Canada) all-service type military command ever to be operated within the boundaries of the North American continent. It is the first peacetime organization with cooperative operational defense planning involving a situation wherein the governments of Canada and the U. S. place military forces at the disposal of a single joint commander, U. S. Air Force General Laurence S. Kuter. It is also the first time within the United States that elements of the three services have operated under one unified commander.

Major Wolff's talk also outlined the various defenses—BMEWS, DEW, Canadian Radar Line and the Pinetree Radar System—and anti-aircraft weapons such as Nike and Nike Hercules.

Turning to another area of our government's operations, David A. Hamil, administrator of the Rural Electrification Administration, reported on his agency's efforts toward "Less Red Tape."

He stated that today REA runs both the electric and telephone loan programs with fewer employes than it used to take to run one program. In 1949, before telephone loans, it took 1,076 man-years to operate the electrification program. In 1959, it took only 1,018 man-years to keep both programs moving ahead.

Outlining REA's efforts to serve borrowers better with less red tape, Mr. Hamil detailed changes which have been made.

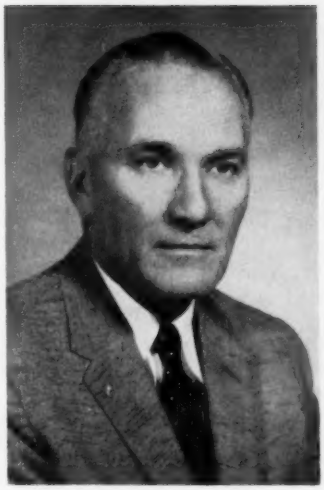
For example, it had become apparent, he said, that REA borrowers desired a single point of contact with the agency. So, on Aug. 17, 1959, accountants, engineers, loan appraisers, etc. were combined into area offices.

Also, REA no longer make direct contacts with consultants hired by borrowers. Correspondence goes to the companies themselves, he said.

In February 1960 a new simplified procedure of preparing telephone loan applications to finance improvements and extensions in areas already served by REA-financed central offices was introduced. This simplified this type of loan application and cut paper work. Complete area coverage surveys and area coverage designs are no longer required for these loans, he pointed out.

For new central office areas, the survey and design have been combined into a single Basic System Plan Report.

Mr. Hamil said: "The underlying objective of REA is to move as quickly as possible toward a situation 'in which every borrower possesses the internal strength and soundness to guarantee its permanent success as an independent local enterprise.'"



Speaking on "Grass Root Participation," G. H. Briggs, operating vice president of the General Telephone Co. of the Southwest, urged the conventioneers to become active in politics.

In this election year, it was appropriate that the convention look at participation by business enterprises in getting a better governmental climate in which to operate and, to this end, G. Howard Briggs, operating vice president of the General Telephone Co. of the Southwest spoke on "Grass Root Participation."

Mr. Briggs stated that specific programs in the political action field to generate the grass roots of understanding, education, information and general political interest can start within companies. He went on to say that he believes business and industry, along with others, should maintain or create in the minds of employes an enlightened, realistic concept of individual grass roots political participation.

Doing something to improve the business climate is the subject of the General Telephone Co. of the Southwest's civic and governmental affairs program, Mr. Briggs explained. This business climate program is the "net result of all outside conditions affecting the cost and ease of operating a business in a truly rewarding way in the community."

Four objectives of this program in his company were listed by Mr. Briggs as follows:

"(1) To assist in achieving and maintaining an equitable climate within all levels of government.

"(2) To develop a broader and more effective realization within the entire organization of the impact of governmental policies and actions upon our operations.

"(3) To encourage members of management to participate in activities designed to promote an equitable business climate and to take informed and studied positions on matters affecting our operations, as well as business in general.

"(4) To encourage all of our employes, acting as individuals to exercise their full citizenship franchise, to be active in the political parties of their choice and to be informed on candidates and political issues."

Such a program, Mr. Briggs stated, must be based on the fundamental fact that when a healthy business climate exists in your community, everyone in the entire community benefits from it.

This program does not have as its purpose to create an atmosphere of intervention by business. This, he said, could destroy our entire effort.

The program's purpose is to: (1) Encourage employes to be active in their party; (2) to make them informed voters; (3) to help them understand political party structure and functions through participation in company-sponsored workshops, and (4) to make these workshops a community relations public service, inviting a cross section of community leaders to attend.

General of the Southwest's first formal step in implementing its objectives was to present The United States Chamber of Commerce Action Course in Practical Politics to its personnel.

By September, 92 per cent of the company's management employes had taken the course and during October the craft employes were to begin taking it.

The course is under the supervision of the public relations department. The first step involved the training of 15 discussion leaders since the course is a discussion course. These leaders then returned to their areas and began to hold courses for management personnel.

Mr. Briggs says these courses proved to be very successful, judging from the number of employes participating in grass root politics on an individual basis.

The next step in the company's program will be to present a basic economics course to all employes.

Membership in the United States Independent Telephone Association is another way that telephone companies can help to improve the business climate in which they operate.

Allan R. Stacey, of Sunland, Cal., a USITA director, chronicled how "USITA Continues to Lead the Way."

Calling attention to major points in the association's activities in legislative

(Continued on page 46)

Courts and Commissions

Commission Appeals to Kan. High Court in SW Bell Case

A motion was filed by the Kansas Corporation Commission, it was reported on Oct. 18, with the Kansas Supreme Court asking the high tribunal to advance a rate case involving the Southwestern Bell Telephone Co. "so that it may be heard as soon as possible" (TELEPHONY, Oct. 8).

The commission has appealed a ruling in the case by Shawnee County District Court.

The lower court granted an injunction against the commission, permitting Bell to put the higher rates into effect under bond, for possible refund if permanent rates were lower.

The company contends that its rates should be based on "fair value," or replacement, cost of equipment and plant. The commission granted the lower rate increase on the basis of the original cost, less depreciation.

In filing the motion to advance the hearing, the Kansas commission said it sets rates and regulates 307 public utilities in the state.

Commission Chairman Harry Wiles said all "would like their returns figured on an inflated basis." He noted that Northern Natural Gas Co. already had filed for an increase of $439,000 based on "fair value" of applicable plant in service.

"For these reasons, and to prevent the collection of the higher rates, which we feel are not justified for any longer than necessary," he said, "we are asking the (state) supreme court to hear this matter as soon as it can conveniently do so."

SW States, Tex. Subsidiary Receive Rate Approvals

The Southwestern States Telephone Co., Brownwood, Tex., has been granted rate increases in the cities of Flat Rock, Henderson, Lewisville, and Talpa, all dial-operated.

Old and new rates are shown as follows:

Flat Rock—55 stations.	*Old*	*New*
One-party business	—	$10.50
Two-party business	6.50	8.25
One-party residence	—	5.50
Two-party residence	4.00	4.35
Four-party residence	3.25	3.25

Henderson—4,799 stations.		
One-party business	$6.50	$7.50
Two-party business	5.25	6.25
One-party residence	3.50	4.00
Two-party residence	3.00	3.50
Four-party residence	2.50	2.75

Lewisville—1,377 stations.		
One-party business	$7.00	$8.00
Two-party business	5.25	6.25
One-party residence	4.25	5.00
Two-party residence	3.25	4.00
Four-party residence	2.50	3.00

Talpa—89 stations.		
One-party business	$6.50	$8.50
Two-party business	5.50	7.25
One-party residence	4.75	5.75
Two-party residence	3.75	4.75
Four-party residence	3.00	3.75

•

The Four States Telephone Co., subsidiary of Southwestern States, has been granted an increase in rates in London, Tex.

London is a dial-operated exchange with 62 stations.

Old and new rates are as follows:

	Old	*New*
One-party business	$7.00	$12.50
Two-party business	4.00	10.50
One-party residence	5.20	6.75
Two-party residence	4.10	5.75
Four-party residence	2.50	4.25

Authorize New Rate Schedule For S. C. Cooperative

The South Carolina Public Service Commission, it was reported on Oct. 14, has approved a new rate schedule for business service; and for one, two, four, and eight-party residence service, for the Horry Telephone Cooperative, Inc., Conway.

The new rates will affect subscribers at Horry, Loris, Aynor, Floyds and Murella Inlet, and will apply at Red Hill and Lakewood exchanges "when a proposed expansion program is completed."

Authorize Sale in Missouri

The Bolivar Telephone Co. on Oct. 5 received Missouri Public Service Commission authority to purchase the Stockton Mutual Telephone Co. and to convert the Stockton exchange to dial service (TELEPHONY, July 30).

PT&T, General of Cal. Ask Approval of EAS Rates

The Pacific Telephone & Telegraph Co. and the General Telephone Co. of California on Oct. 5 asked the California Public Utilities Commission for permission to provide extended area service between Pacific's Fresno exchange and General's Fowler exchange.

Also sought by the Pacific company was permission for extended area service between Fresno and Caruthers and Del Ray.

Present rates for Fresno and those incorporating extended area service are as follows:

	Present	*Proposed*
One-party business	$10.25	$10.55
Two-party business	7.85	8.10
One-party residence	5.15	5.30
Two-party residence	3.85	3.95
Four-party residence	3.25	3.30

Present rates for Fowler and those including extended area service are as follows:

	Present	*Proposed*
One-party business	$ 7.25	$11.55
Two-party business	5.85	9.10
One-party residence	5.35	5.80
Two-party residence	4.10	4.45
Four-party residence	3.30	3.80

The companies expect that the toll-free service could be put into operation about 18 months after the new rates are approved.

Approve Rate Increase For New York Company

The New York Public Service Commission it was reported on Oct. 20, accepted a tariff amendment filed by Berkshire Telephone Corp., Kinderhook, to increase its rates, effective Nov. 1.

In filing its new tariff, the company reported that its operating expenses for the next 12 months will exceed those of 1959 by almost $12,000. It was estimated that the new rates will produce about $11,800 additional annual revenue.

The company serves about 1,950 tele-

phone stations through dial offices located at Kinderhook, Niverville, Stuyvesant and Stuyvesant Falls. Its present rates have been in effect since May, 1952.

N. C. Commission Rejects Attorney General's Petition

The North Carolina Utilities Commission on Oct. 17 rejected a petition of the North Carolina Attorney General's office that it dismiss a without-a-hearing petition of the Carolina Telephone & Telegraph Co., Tarboro, which seeks to extend base rate areas and adjust local exchange rates (TELEPHONY, Sept. 24).

Reasons for dismissing the petition were not given, but two commissioners filed a dissenting report in which they stated "we believe the majority's order to be ill-founded and erroneous."

The dissenters, Commissioners Richard Long and Thomas Eller, said, "It appears to us that the majority is directing the course of this proceeding into a procedural and substantive dilemma from which it can only be rescued by the courts."

Appeal Refusal to Yield Line Case to N. J. High Court

An appeal of a $200 fine for refusal to give up a party line in an emergency was heard in the New Jersey Supreme Court on Oct. 11 (TELEPHONY, Apr. 23).

Mrs. Mary C. Zelinski of Millburn, N. J., appealed two convictions for refusing to yield her party line to a doctor trying to telephone the hospital in a heart attack case.

Mrs. Zelinski's attorney contended that there was no real emergency last Nov. 11 when Dr. Marvin C. Becker was summoned to the home of Mrs. Catherine G. Hammerle to treat Mrs. Hammerle's mother, Mrs. Sophie Wetzel.

Essex Judge Ferdinand D. Masucci had ruled that the emergency was not Mrs. Wetzel's actual condition, but the necessity to get her to the hospital immediately in case of complications.

Dr. Becker testified that when he tried to arrange a transfer to the hospital for Mrs. Wetzel it took him five attempts, extending over an estimated 8 to 15 minutes, to get the line.

Hear Neb. Rate Application

The Nebraska Railway Commission was to have held a hearing on Oct. 25 on the request of the Stanton Independent Telephone Co. to adjust rates and charges. The company has been given authority to borrow $268,000 for dial conversion (TELEPHONY, Sept. 10).

General of Southwest Gets Rate Approval in Texas

The Olton, Tex., City Council and the General Telephone Co. of the Southwest, San Angelo, Tex., have agreed upon a rate increase, it was reported on Oct. 7.

Instead of making a request for specific rates, the company presented an open-end rate request to the council in September. The council then presented specific increased rates which were accepted by the company.

Old and new rates are shown as follows:

	Old	*New*
One-party residence	$5.50	$6.25
Two-party residence	4.75	5.50
Four-party residence	4.00	4.50
One-party business	9.00	10.50
Two-party business	5.50	6.25

Stockholders Meet to Decide Disposition of Kan. Company

Stockholders of the Farmers Cooperative Telephone Association, Oberlin, Kan., were scheduled to meet on Oct. 24 to decide whether or not the company should go into receivership.

The meeting is an outgrowth of a ruling in a Kansas district court by Judge Robert W. Hemphill who had dismissed an action calling for appointment of a receiver.

Judge Hemphill ruled that law requires a meeting of stockholders before an action of receivership can be maintained. The action that a receiver be appointed was filed against the board of directors, a majority of whom were reported to favor the action.

The receiver would be required to either rebuild the system or to sell the company. Rural Telephone Service, Lenora, has offered to purchase the Farmers company.

Service Change Ok'd in Kan.

The Kansas Corporation Commission has authorized the Wilson Telephone Co. to serve the Tipton exchange. At the same time, the Tipton Telephone Co. was permitted to cease doing business.

Incorporate in Oklahoma

The Cook Telephone Co., Inc., Cyril, has been granted a charter of incorporation. Incorporators are Carroll and Luella Cook of Cyril and Icy S. Moore of Lawton.

Ask Dial Rates in Mo.

The Missouri Public Service Commission has set Nov. 29 as the hearing date on the application of the Purdy Telephone Co., Inc. for authority to establish dial telephone rates at its Fairview exchange.

Order Minn. Company to Better Service Within Year

The Minnesota Railroad & Warehouse Commission on Oct. 18 dismissed a complaint charging inadequate service by the Embarrass Farmers Cooperative Telephone Association, contingent on the association's taking steps within a year to improve the level of service within its territory.

The Embarrass cooperative operates in an isolated section of the state in a wooded territory, approximately 35 miles from the city of Virginia and 15 miles from the village of Ely. Although its service area is approximately 135 square miles, there are only 190 subscribers.

In recent years, expansion of taconite mining operations by the Reserve Mining Co. and the Erie Mining Co. has brought many new families to the area. It was a group of these newer residents who had lodged the complaint against the cooperative. The commission's report stated that present subscribers, who pay an average of $2.00 per month for service, were satisfied, even though magneto service was being offered with an average of 17 to 20 stations per circuit.

Authorize PT&T to Serve Lake Berryessa, Cal.; Set Rates

On Oct. 11, the California Public Utilities Commission granted the application of the Pacific Telephone & Telegraph Co., and denied the application of the Capay Valley Telephone System, Inc., Guinda, to establish an exchange to be known as Lake Berryessa, and to set up appropriate rates.

The proposed new exchange would serve territory surrounding Lake Berryessa, approximately 16 miles north of the city of Napa. The commission order requires PT&T to establish the exchange no later than June 1, 1961; to discontinue all toll stations within the base rate area; and establish rates for exchange and toll telephone service.

Prior to formation of the artificial lake, an Independent telephone company, Monticello Telephone Exchange, served the area. However, on commission order in October, 1956, this company ceased operations. Since May, 1957, Pacific Telephone has provided toll station service on the western shore of Lake Berryessa.

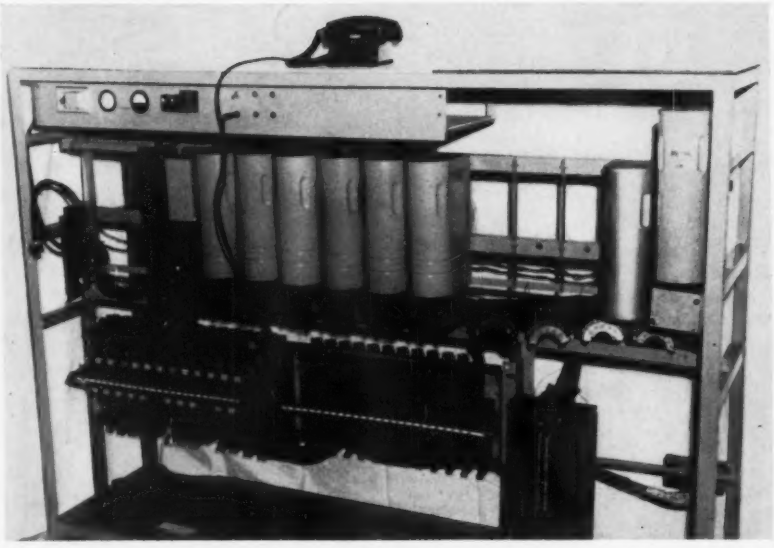
The commission based its decision on the fact that PT&T had filed its application three months earlier than Capay; and that while Pacific's proposed rates were lower than Capay's, and did not provide sufficient revenues to offset the estimated cost of the first

year's operations, the anticipated future growth of the territory would tend to bring Pacific's revenues more in line with costs.

OK Raise, EAS Between General Exchange, Ind. Bell

The Indiana Public Service Commission, it was reported on Oct. 8, approved a petition filed by the General Telephone Co. of Indiana, Fort Wayne, and the Indiana Bell Telephone Co. for EAS between the Butler exchange of the General company and the Bell exchange at Auburn; between Butler and the Bell exchange at St. Joseph; between Auburn and St. Joseph; and between St. Joseph and Spencerville, a Bell exchange (TELEPHONY, Aug. 13).

In eliminating the long-distance tolls, the Indiana commission approved an upward adjustment of rates.



David Peterson, 17-year-old Indiana high school student, built this prize-winning step-by-step dial telephone system.

Ind. Youth Builds Telephone System, Wins State Honors

Old bedrails, spare pinball machine parts and used telephone equipment —items normally peculiar to the junk yard—were all the components a young Hoosier needed to build a prize-winning 4-H exhibit.

The Indiana high school student, David Peterson of Delphi, won a Carroll County, Ind., 4-H Fair division championship with a step-by-step dial telephone system project. After winning the Carroll County show, he took his exhibit to Indianapolis where he received first-place honors at the Indiana State Fair.

According to the 17-year-old youth, his system is equipped for 25 telephone lines and is capable of being expanded to 50.

The unit contains several unique features, including a device for controlling an electrical appliance from any telephone. Users may also listen to a radio program from any instrument, or determine the level of liquid in a tank from the telephones by means of a small oscillator.

David used bedrails to build the frame of his system. Line protection equipment and miscellaneous relays came from surplus stores. A junk yard provided the old pinball machine parts. More than a dozen pieces of equipment were provided by Automatic Electric Co.'s "Operation Grab Bag," a program which donates used communications apparatus to schools and science-minded students. He also received a considerable number of parts from General Telephone Co. of Indiana, Fort Wayne, and from his local telephone company, Carroll County Telephone Co.

David has been interested in telephony since one of his dad's farm hands, who taught telephone equipment in the army, loaned him several communications manuals.

The youth is also active in school and community affairs. He is a semi-finalist in the National Merit Scholarship Test, attended the High School Science Student Institute at Indiana University, and was a 1960 delegate to Hoosier Boys' State. David is president of Delphi Science Math Club, a member of the National Honor Society, and local vice president of the 4-H club.

In addition, he serves on the staffs of the Delphi high school yearbook and newspaper and as a reporter for the student council. He also finds time to hold membership in Hi-Y and Future Teachers of America.

Helping Washington, Pa. celebrate the bicentennial of its founding are telephone people of the Taylorstown Telephone Co. At the switchboard in costume is Mrs. Myra Hodgens, who worked as an operator until Taylorstown was cut over to dial in 1958. Driving the truck is Charles Herrod; next to him (hidden by glare) is M. E. Scherrick. Both Mr. Herrod and Mr. Scherrick are maintenance men. To the right is V. M. Paul, company manager, who has been in the telephone industry and related fields since 1904.

Malleable

"Character is not cut in marble; it is not something solid and unalterable. It is something living and changing, and may become diseased as our bodies do."—GEORGE ELIOT.

How to double your year-end extension business

If you were asked how you'd like a 50% or even greater increase in extension telephone business between now and the end of the year, there's no question what your answer would be.

Increases like this are no figment of a sales manager's enthusiasm. They represent typical *actual* results of a brief, simple "give an extension telephone for Christmas" promotion Stromberg-Carlson prepared for its customers last year.

With this experience as a guide, Stromberg-Carlson this year has pulled out the stops and come up with a much more comprehensive promotion package than the 1959 version. You have bigger and better advertising materials to draw upon—and the chance to get an earlier start.

There's no doubt that your subscribers will welcome a *different* Christmas gift—something as beautiful and

ADVERTISEMENT

practical as an extension telephone in color. *Especially the new, glamorous PETITE phone by Stromberg-Carlson.*

With this kind of product and with the special promotion program now available, you can make Christmas, 1960, extension "selling" time in your community.

Free Materials

How can these valuable sales aids help you?

First let's look at the full list of free materials and then see how they can be used profitably.

GIFT WRAPPINGS: Simple but effective materials for creating an attractive Christmas gift package. A clear plastic bag that shows the phone in all its natural color; a wire "twistem" that makes it easy to secure the top of the bag; a gay colored ribbon easily formed into a bow; a tasteful gift card to add the personal touch.

MAILERS: A new, Christmas-theme bill stuffer in full color will tell your color extension story to all subscribers in this lowest of low-cost manners. The four-page mailers tie in effectively with other phases of your promotional program.

AD MATS: Eye-catching advertisements with sales-proven copy, ready to insert in newspapers with only the addition of your company name and telephone number. Stromberg-Carlson supplies mats of ads, on request, in several sizes and themes to suit your planned campaign.

COUNTER CARDS: Colorful display cards to attract attention in high-traffic locations as well as your own business office. These 7" by 10½" cards provide another timely method to arouse interest in this ideal Christmas gift; can be placed on counters, walls, windows, pay station booths.

RADIO/TV SPOTS: Twenty-second and 1-minute spot announcements to add punch to your other promotion media. Stromberg-Carlson offers complete basic copy, requiring only the addition of local details. Tests show that the subscriber remembers what he hears just about as well as what he sees; this low-cost blanket coverage enters every home . . . is a proven salesman.

for your 1960 HOLIDAY PROMOTION...
"GIVE a Petite for CHRISTMAS!"
YOUR BIG OPPORTUNITY
an EXTENSION PHONE in color
This Christmas give an EXTENSION PHONE IN COLOR!
IMPRINT
An extension phone in color
IMPRINT

Start Right Away

The telephone company that will get its full share of Christmas dollars is the one that makes its plans early. Here are some suggestions from operating companies that have made Christmas promotions an outstanding success:

1. *Employees are your most effective salesmen.* See that every man and woman knows about the plan *before* it is announced to the public. Business office personnel should be carefully briefed in such details as deferred billing, charges to another party, color preference, whether the phone should be gift wrapped or installed, and they should be able to quote dates that will prevent disappointment.

2. *Order extra telephones early.* Many managers who have used a full-scale holiday promotion have succeeded beyond their expectations (a 25% increase over normal extension sales is commonplace, and an increase of 50% or more is not surprising). Nothing could take the "steam" out of promotion-built enthusiasm so fast as the lack of telephones to fill the order.

3. *Materials should be requested at once.* Order now to be sure you have time to organize your plans carefully and to get the quantity necessary to do the job. Stromberg-Carlson reports that early orders for these materials have already been in large quantity. A word to the wise—get your order in now.

4. *Timing is important.* Bill stuffers must be planned for a November mailing to arouse early interest. A first ad in newspapers is most effective if it appears early in November, with subsequent ads pointed toward the campaign climax around the 10th of December. Displays of actual gift-wrapped phones will become appropriate as the holiday spirit picks up about Thanksgiving Day.

Something Really New

5. *There is something new* — the PETITE phone by Stromberg-Carlson. Even if you have tried a Christmas promotion before, there was never a telephone like the *PETITE* to offer. Many Christmas shoppers are already half sold. There never has been such an opportune year as 1960 for extra Christmas sales . . . extra-high revenue in relation to cost. The public is ready and waiting. Are you ready, too?

ADVERTISEMENT

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

DURING THE YEARS between our two world wars, we were led to believe that deep-sea submarine cable was going out of the picture. Then, after the last war, there was a revival of this type of communication.

Now, we read in AT&T's *Long Lines* that the Bell System has plans for the extension of the telephone cable network westward from Hawaii to Japan and other points. Furthermore, the construction by Long Lines of a cable-laying ship which should be ready for her shakedown run by early 1962, will incorporate the most efficient and modern techniques, and will be equipped with necessary gear to lay a new two-directional cable and rigid repeaters which will be used in the new extensions.

It is reported that the important advantages of the new single-cable system over the twin-cable design are the increased range between power feed points and the increased circuit capacity. Factories are now being constructed to fabricate the new repeaters and cable. Production schedules call for 7,000 miles a year. This is equivalent to a California-Hawaii cable every four months.

We wonder what name will be used for the new cable ship. In our opinion, The Alexander Graham Bell would be most appropriate.

•

We had the pleasure recently of inspecting a model of four-duct conduit constructed of linear polyethylene. This conduit is an exact copy of multiple duct vitrified clay conduit, but is equipped with a water-proof connector for use at the joints. It can be extruded in 20-foot lengths. The developer of this duct claims that its cost will be competitive with other types of conduit.

The cost of shipping and installation of the plastic variety should be considerably less than some of the conventional types. This new conduit is not yet in production, although patents have been applied for and manufacturing arrangements are under consideration.

•

We have a new directory from our old friend, D. E. McGregor, president and manager of the Nebraska Central Telephone Co., Gibbon.

This directory makes use of All Number Calling (ANC). It also lists the number before the name in this manner: "527-3333FIRE." It appears that this arrangement has some advantages in that the number is somewhat easier to associate with the name.

•

We flew down to Atlanta, Ga., recently and enjoyed several meetings with military and Bell communicators. Things are humming in Dixie and the Princess set is being installed by the thousands.

•

Five years ago, the favorite spot for the telephone in the home was the living room.

Since 1958, the kitchen has led all other locations. Then, also, telephones in the bedroom, laundry and recreation rooms are gaining in popularity. Patio and bathroom telephones — although late arrivals on the scene — are also becoming more popular.

•

There seems to be some difference in opinion among telephone engineers as to how outside plant drawings should be prepared. Some prefer that proposed plant be shown in dotted lines. Then, when it is made a part of the permanent plant, the dotted line is traced over to make it solid. Others prefer to show proposed plant in a fine line and then when it is made permanent, it is inked in a heavy line on the tracing.

Either method makes it possible to use one tracing without redrawing for the proposed and permanent plant. If any of our readers have ideas in this connection, we'd be pleased to hear from them.

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While in Philadelphia recently we had some time to kill while waiting for a plane and spent it roaming around the air terminal. This is one terminal that appears to have an adequate number of pay telephones. We did not observe patrons waiting to use a booth as is so often the case.

Furthermore, we noted several free telephones that can be used to call local hotels to make reservations. This is a real convenience to the traveling public.

•

A book that will be of interest to any student of communication is titled: "Magnetism and Electrical Fundamentals."

This paper-covered book of 132 pages can be purchased from TELEPHONY for $2.50. It presents a rigorously accurate but nontheless readable and interesting coverage of magnetic and electrical fundamentals utilizing the Franklinian approach. The emphasis is on the physics viewpoint. This book is certain to prove valuable to anyone who desires to enhance his position by the process of self-education.

•

The Pentagon, in Washington, D.C., the world's largest office building, has a new claim for largeness. The parking lot is referred to as the World's Largest Used Car Lot."

•

Vacation is described as a period when you exchange good dollars for bad quarters.

•

Crosstalk: If happiness could be bought, few of us would have the price.

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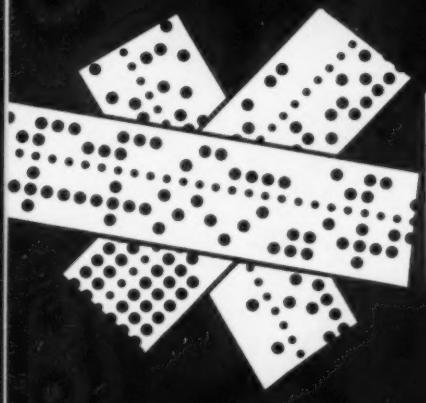

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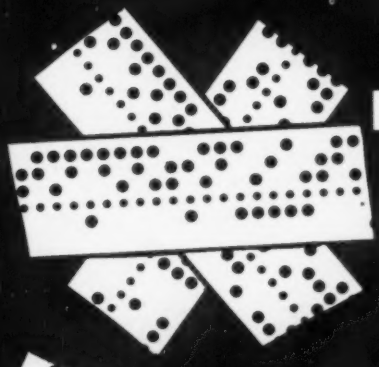

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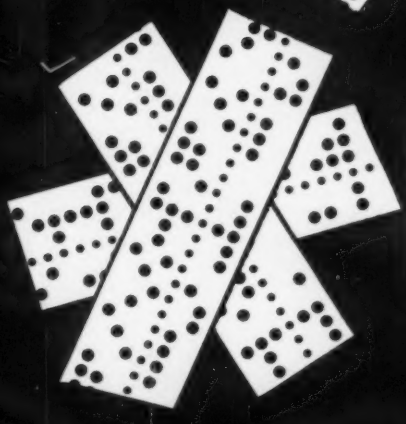

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60-T-7

How to Reduce Time Spent Handling Reports and Forms

By William J. Milford

"WHY DOESN'T some genius discover a way to do without reports entirely? Then maybe I could get some work done!"

The telephone company executive who suffered this complaint was speaking for many hundreds of his fellow businessmen.

For many executives, about half of their working time involves standard forms and reports of one kind or another.

One authoritative estimate places the cost of forms production for the federal government, for example, at 200 million dollars out of a total 300-million-dollar cost of printing and duplicating.

There is nothing wrong with reports as such. Doubtless, it would cost a great deal more to do business today if the routine report were entirely eliminated.

The trick is not to do away with all such reports, but to minimize them and to reduce the time an executive must spend in working with them.

Efficiency experts have spent a lot of time and effort in developing practical approaches and short cuts to handling the problem. Here are some hints on simplification which can be applied by the individual telephone company executive.

Size. The larger the sheet of paper or card, the more unwieldy and time-consuming is the handling of it. In many instances, the use of both sides of a card or sheet can cut size in half.

Preprinting. Department names, numbers, codes, symbols, etc., are items which too often must be filled in by hand, when they could be printed as part of the form itself.

Punching. Often a spindle file or binder is being used to file a form or record, when prepunching the form by machine at the time it is printed can eliminate this step.

Simplification. This embraces a lot of things. One of the most-often-overlooked is determining where a "yes" or "no" will serve in place of a written explanation. In these cases, boxes should be provided so that either "yes" or "no" can be checked off, even saving the time necessary to write the word.

Separation. Often we only pass on a small part of the data given in a form and discard the balance. Scoring or perforating long forms to permit the detachment of unnecessary parts and for routing other parts along the line, can be a great timesaver.

Need. Every form we use should pass this test. It is mighty easy to go on a "forms binge" in any company. It pays, every time a form is created, to determine the real need for it in the first place. A periodic check on a form's usefulness can also keep things in proper balance.

Higher Standards. A short course in forms writing and preparation will eliminate a great deal of wasted time.

Formula. Use of a formula will keep reports shorter, clearer and more accurate. Here is one in wide use which can be altered to fit the individual company's needs. Reports should give:

(1) The subject.
(2) The problem in (a) general terms, (b) specific terms.
(3) Solution proposed with (a) advantages, (b) disadvantages.
(4) Recommendations.

Where detail is necessary the reader should be briefed at the start with charts, lists and figures rather than long-winded written details.

Subordinates. Since a great part of the executive's report handling problems arise with his subordinates who prepare these papers, it is definitely to his advantage to improve his staff's report practices.

Great changes can often be brought about by a little time spent in showing employes the company's purpose in the reports they have to compile. Invariably, companies have noticed that clearer, sharper and better reports come from employes when they know how their work is going to be applied to specific problems.

Contents. Reports should contain certain specific details determined in advance to be necessary in understanding the situation in question.

For example, if a budget report is submitted by the accounting department to the company treasurer, it is imperative that this report include a forecast of anticipated receipts as well as a comparison with prior budgets. Without this information, any budget report has little value. Although this is a very elementary example, it illustrates the point that some reports are valueless unless they contain certain basic information.

Spacing. The spacing and scheduling of reports can also do much toward relieving excessive loads at given times in the executive's office. A tremendous load of reports (say around the first of the month) can wear down even the hardiest individual. And much of the good the reports contain can be lost by the load carried on that day and the attitude we have toward the task.

Where reports are spaced over a period of time so that there are never peak loads in a given executive's office, their value increases considerably. Efficiency in handling the report increases.

We can always handle one or two in a given day more efficiently than if we must handle 20. Spacing of reports (as opposed to bunching) often reduces work loads in other parts of the organization at the same time.

Delegating authority. Still another procedure is to cut down the amount of material we must read and handle by delegating more direct authority to our assistants. Abilities of personnel have improved during the last few years, in my opinion. An executive's staff today is better educated and trained and is more capable of making minor decisions than were the men or women on his staff 10 or 15 years ago. If a subordinate knows the basic policy involved on any given point he is capable of handling any variation with greater assurance.

Separation of details on reports into those which can be adequately handled by our staff and those which must be left for our major executive decisions can often reduce the load required upon the executive by as much as 70 to 80 per cent.

COURIER SATELLITE

Concluded from page 21

Automatic cryptographic equipment will be employed "in-line" and be associated with each input t-d and output t-r.

Present Army planning forecasts operational Courier satellites as part of the military communication system early in calendar year 1963. The transferring of low priority traffic to the Courier satellite system will drastically reduce the load on intercontinental high frequency radio systems. Thus freed of channel-choking volume, high-frequency radio circuits can be used primarily for high-speed demands of intelligence, warning and strategic command control.

GENEEN ASKS SOUND CLIMATE

Concluded from page 22

pletely from U. S. Government funds supported by taxes.

"The enormous increase in government spending that would result from such an effort could cause further serious strain on our national credit and gold supply and create more inflation here at home.

"As we see it, what is needed is a recognition of the important part private investment must play in carrying out these avowed investment projects so as to enable our government to keep both our dollar and our credit, both here and abroad, on a solid gold rather than a gold-plated base.

"This letter is intended to set the record straight in regard to the comments that have been publicly made and is not concerned with pleading our particular case. Our own interests in Cuba and elsewhere are not as important as a clearer focus on the need for a government policy of real support for U. S. foreign investments. It is our earnest hope that both presidential candidates will examine the facts and use them to develop policies that encourage, not discourage, private foreign investment.

"As a matter of current interest to both candidates, it might be added that there are about four million U. S. stockholders whose interests are affected by the seizure of U. S. property in Cuba. That figure represents approximately one-third of all stockholders who have put their savings in the securities of U. S. corporations."

Vitality of Deeds

"A nation's character is the sum of its splendid deeds; they constitute one common patrimony, the nation's inheritance. They awe foreign powers; they arouse and animate our own people."—HENRY CLAY.

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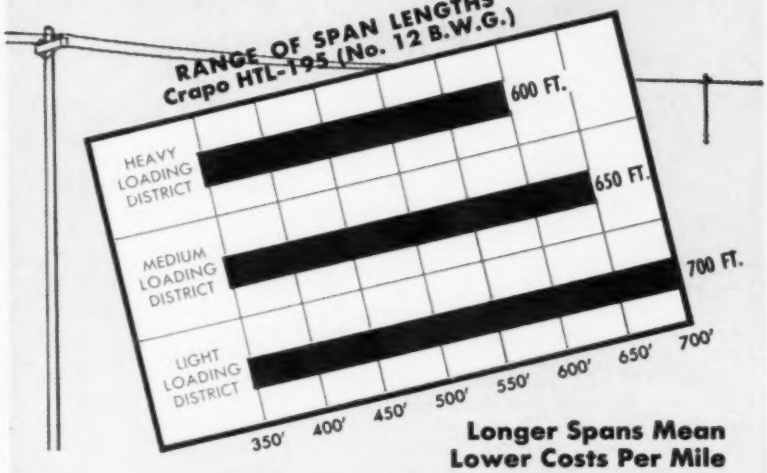

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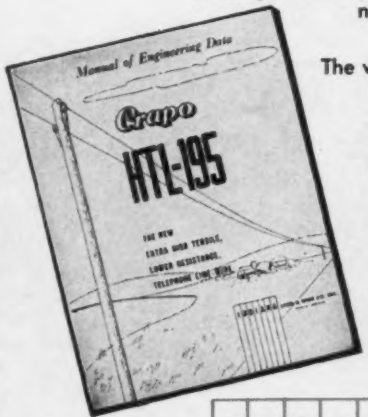

WRITE TODAY for FREE COPY of the CRAPO HTL-195 "Manual of Engineering Data" No. A-195

INDIANA STEEL & WIRE COMPANY, INC.
MUNCIE, INDIANA

IN THE NATION'S CAPITAL

Continued from page 15

said Russia is entirely capable of putting up such satellites and that these may be high on the list of new Soviet projects.

Problem Not Insoluble

Yet the language barrier problem is not insoluble, if a concerted program could be launched under an international agreement among world education authorities as to goals, targets, etc. Let us take a look at what seems the most insuperable hurdle—the sheer number of languages spoken in the world today. These amount to more than 500, not counting some local dialects or nearly extinct tongues spoken by a few thousands of people, such as remote jungle tribes.

That discouraging figure of 500 languages is only a bogeyman! The real problem boils down to a much smaller number. *Although there are over 500 languages spoken in the world today, not counting dialects and other local variations, only 135 of these languages are spoken by more than one million people each!* So, if we take a world population figure of about 2.8 billion people, it is safe to say that about 99 per cent (or all but a negligible fraction) speak these 135 different languages. So, for comparative purposes, we can just forget about 365 languages!

Only 13 Major Languages

Next, how do these 135 languages rank with respect to the number of people who speak them? Well, out of the world population of 2.8 billion, there are over a billion—or nearly three-quarters of the people of the world—who speak only 13 different languages! So, again by way of simplifying our comparison, let us forget about those 122 "minor" languages of the world, and concentrate on these 13 major languages. This means, of course, throwing out a lot of languages which we usually think of as very important —Polish and all the other Slavic languages, all the Scandinavian languages, modern Greek, and a host of others which have quite a reputation. The hard fact is they are all spoken by less than 50 million people each. So, therefore, they do not rate with our major 13.

Now, finally, what are these 13 major languages? How do they rate against each other? Well, for statistical convenience let us make one more division. Let us draw a line between the "Big Six"—meaning languages spoken by more than 100 million people each, and the "Middle Seven," spoken by people between the 50 to 100 million bracket. Here is how they rate.

Account for Two Billion

Of the Big Six, we have the following:

Chinese, 600 million
English, 281 million
Hindustan (Urdu), 200 million
Russian, 156 million
Spanish, 146 million
German, 120 million
Total, 1.5 billion, plus

Next, let us look at the Middle Seven:

Japanese, 96 million
Bengali, 80 million
Portuguese, 76 million
Arabic, 77 million
French, 71 million
Malay, 69 million
Italian, 57 million
Total 520 million, plus

So we see that the Big Six combined with the Middle Seven account for well over 2 billion *or about three-quarters of the entire world population of 2.8 billion!* That means three out of every four people in the world speak one of the 13 major languages. Obviously, the problem gets much smaller when viewed from this angle.

Selection Is Problem

Next, if we were to set about selecting one, or two, or three, of these major languages to be used as universal alternatives in bilingual education, which would we choose? Well, obviously our choice would probably be made from the Big Six rather than the Middle Seven, for the simple reason that so many more millions of people already are speaking the Big Six languages—almost two-thirds of the world population. This would be a hard decision because it would mean ruling out some very beautiful languages, such as French and Italian, so rich in cultural tradition and literature.

This does not mean, however, that in turning our attention to the Big Six, that we would inevitably have to make Chinese the first choice strictly on a numerical basis. First, it should be explained that that big round figure of 600 million Chinese-speaking people is somewhat misleading. Only about three-quarters of them—460 million to be more nearly exact—speak Mandarin Chinese. The rest speak four other dialects of Chinese—all of which are mutually unintelligible. But even on the basis of 460 million Chinese, all speaking Mandarin Chinese, that number is so far ahead of the second runner-up, which is our own English language, as to be entitled to consideration.

But here we encounter a serious inherent linguistic barrier which makes Chinese a difficult, if not impossible, choice for any bilingual program. Chinese is a nonalphabetical language and it has other linguistic limitations, such as tonal variation (sing-song) and endless word duplication (homophones) which would make it exceedingly difficult for the rest of the world, or any appreciable part of it, to learn Chinese as a second language—even if they wanted to do so, which is very doubtful. In other words, it would probably be easier, for the rest of the 2.8 billion world population to learn some other major languages—those which have an alphabetical approach, and are not hamstrung with sing-song or excessively repetitious words—than to learn Chinese with all three of those built-in handicaps.

Now, all five of the other Big Six major languages meet these qualifications. Three of them (English, Spanish, and German) use the same Roman alphabet, which is in itself a great common denominator of mutual understanding. Russian uses a drastically inflated version of the old Greek alphabet, and has a great many other faults as a language which would make it less practical as an alternating choice to the native tongue of other people of the world. So, on a rational base, the choice of a secondary language would seem to lie between English, Spanish, and German. As a bilingual program developed, a trilingual program, including Russian, Hindi, etc., might emerge.

Education Plays Role

What does all this lead to? Well, if a start could be made today while we are still in the year 1960, on a program requiring every high school freshman to take a second language—selected from the Big Six. And if they were required to continue through high school and into college, until a conversational and reading proficiency standard were acquired, we could, in the United States, by the year 1970 have a 10 per cent bilingual population, as compared with less than 1 per cent today! Many students might achieve the bilingual goal much sooner, and go onto a trilingual basis.

The virtue of such a program is that it has a *cumulative* effect. For every million English-speaking natives who learn Spanish—the communication quotient or potential of *both* the English —and Spanish-speaking populations is increased by one million. The same goes for every million Spanish-speaking natives who would learn English. Furthermore, by concentrating on the Big Six or even a smaller number of "first choice" bilingual alternates, there would be a great deal of cross fertilization.

Spanish students would talk and write to each other in Spanish and interest non-Spanish students in becoming Spanish students. This factor has always paid big dividends in any mass educational program in languages, as the Armed Forces found out during World War II. Also, any nation tempted not to play ball with such a program, if it were seriously started, would be the biggest loser. It would hardly dare risk the isolating consequences of not joining.

Start Must Be Made

Are there no alternatives to the bilingual approach, to improve world language communications? This writer has heard of none very promising. We can dismiss Esperanto and similar synthetic languages as an idealistic mirage which has not moved off dead center for over 70 years. Nobody wants to learn a language which virtually nobody else speaks, when with the same time and effort they could learn one spoken by hundreds of millions. By the same token, "basic English," while an ingenious short cut which could be very useful as a substitute for learning English, does not pass the barrier of human chauvinism, if it were urged on a "one-world" language basis. The Spanish would ask "Why not basic Spanish?" and the Russians: "Why not basic Russian?" and then we are right back where we started.

Where would a compulsory bilingual program fit into our present educational setup? We might start by cutting out some of the trivia which now poses under phony educational labels, such as automobile driving, rhythm dancing, and other drains on the taxpayer's dollars. The main thing is to set up a program and get started. This shrinking world of ours won't wait for us to make up our minds. For the telephone industry there is obviously a real bread-and-butter interest here. An international goal of 10 per cent bilingual population by 1970 could do far more for world peace and better understanding than a lot of shoe-throwing, desk-pounding hams trying to throw their weight around the United Nations Assembly.

Named to Employment Group

Howard K. Onstott, assistant vice president of the American Telephone & Telegraph Co., has been appointed a member of the Federal Advisory Council on Employment Security, according to an announcement on Oct. 19 by Secretary of Labor James P. Mitchell. The council acts in an advisory capacity on policies and programs relating to the federal-state employment service and unemployment insurance programs.

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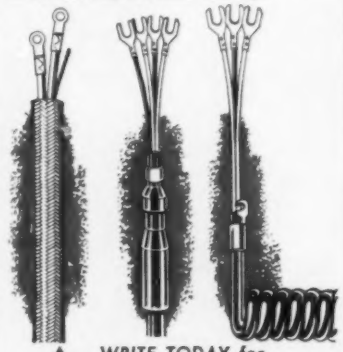
Patch cords, transmitter cords, test and inter-communication cords are all quickly available from COMCO, and cords made to your exact specifications require little more than an immediate delivery schedule. Determining the exact time required for delivery of your problem cord takes only a call to COMCO. Why not make it today?



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ROCKY MOUNTAIN GROUP LOOKS AT SPACE AGE

Concluded from page 33

matters, Mr. Stacey detailed them as follows:

Federal Excise Tax on Telephones—five million bill inserts were made available by USITA for subscriber distribution.

Wage-Hour Act—USITA printed a booklet outlining principal arguments in favor of the switchboard operator exemption. These booklets were distributed to each member of the House and Senate.

Other areas of USITA activity outlined by Mr. Stacey include:

Toll Compensation Negotiations—The increases in toll compensation on message toll business interchanged with the Bell System are as follows: 18 million dollars in 1953, 11 million dollars in 1956, 12 million dollars in 1959. This makes a total of 41 million dollars on an annual basis in six years.

Other toll committee "irons in the fire" include: A survey of the line haul situation; a survey of Independents' DDD operations; and a study of special services.

As for the revised USITA Separations Manual, its first regulatory test is being made in Ohio on a proceeding instituted by General Telephone Co. of Ohio seeking approval of the manual's provisions for determining toll divisions. Similar petitions have been filed in Florida, Kentucky and Washington.

Advertising Program — Evidence, as contained in mail to the USITA shows, Mr. Stacey said, that it has been "successful in identifying the Independent industry in the public mind, in providing expansion capital for companies, in promoting a better atmosphere for more adequate rates for service, in attracting capable personnel, in building good will and public confidence and in enhancing the prestige of Independent telephone companies generally."

Federal Communications Commission —USITA is taking part, Stacey stated, in the so-called "Physical Inter-connection Case." This is the outgrowth of opposition by certain railroads to a revised private line tariff filing by the AT&T and associated Bell companies specifying the circumstances under which physical connection between privately-owned and telephone company common carrier communications systems are to be made.

Radio — Increasing interest in dial mobile radio techniques has produced a series of meetings between USITA's Radio & Carrier Subcommittee and Bell System representatives looking toward the "establishment of an industry-wide approach" towards mobile telephone service.

The Rocky Mountain association elected the following directors:

J. W. Baker of Coeur d'Alene, Ida.; C. A. Blakeney of Carlsbad, N. M.; Ward Blazzard of Kamas, Utah; Rulon Callister of Delta, Utah; E. P. Corbin of Monticello, Utah; Earle Crandall of Pinedale, Wyo.; Donald Dickson of Rupert, Ida. and C. W. Haas of Big Timber, Mont.

C. M. Hart of Kingman, Ariz.; L. J. Hickens of Ruidoso, N. M., E. J. Jennings of Holbrook, Ariz.; Charles McLean of Kalispell, Mont.; D. A. McLean of Denver, Colo.; H. B. Norman of Gunnison, Utah; Victor Redman of Pagosa Springs, Colo.; Floyd L. Reyher of Haxtun, Colo. and Grid Rowles of McCall, Ida.

Officers are: President, Mr. Dickson; vice president, Mr. Corbin and secretary-treasurer, Mr. Baker.

H.M.T.S. Alert To Lay Cable For Round-The-World System

A new British cable ship, Her Majesty's Telegraph Ship Alert, will be launched from the Glasgow yard of the Fairfield Shipbuilding & Engineering Co. in November.

Alert's first commission will be to lay a 400-mile cable in the Gulf of St. Lawrence, between Corner Brook, Newfoundland, and Grosses Roches, Quebec. The operation will be carried out on behalf of the Canadian Overseas Telecommunication Corp. and will be part of the primary stage of a new round-the-world British Commonwealth cable which will stretch 32,000 miles and cost 250 million dollars.

When the St. Lawrence link is complete, Alert will take over maintenance work on the north Atlantic to allow H.M.T.S. Monarch to get ahead with the first part of the primary stage of the Commonwealth plan—the laying of a new transatlantic cable between Scotland and Newfoundland. For the first time, a lightweight 60-circuit cable, developed by British engineers for the General Post Office, will be used.

The launching of Alert brings the G.P.O. cable-laying fleet to four. She is around 6,000 tons gross and among her equipment will be the newest type of V-sheave paying-out gear which will allow the two-way rigid repeaters to by-pass the sheaves and give continuity of laying.

The St. Lawrence link is due to be completed by early summer next year and the 2,000-mile Atlantic cable by the fall.

Shepherd Elected Vice President 3 Independents

Lewis F. Shepherd has been elected operating vice president of the Jamestown (N. Y.) Telephone Corp., Meadville (Pa.) Telephone Co. and Home Telephone Co. of Ridgway, Pa., to succeed Albert N. Seward who plans to retire next May.

L. F. SHEPHERD

On July 1, Mr. Shepherd resigned as president of the General Telephone Co. of Pennsylvania, a position he had held since 1950. On Aug. 1, he retired after 35 years with the General Telephone System.

He began his telephone career in 1924 as a groundman for the Winnebago County Telephone Co. at Rockford, Ill. He has had a broad background of practical experience, having worked in telephone exchange operations as lineman, installer-repairman, central office maintenanceman, wire chief and as local manager.

Since moving into the administrative area he has held the positions of general traffic engineer, general traffic superintendent, general commercial superintendent, and personnel director.

During the war, Mr. Shepherd served as the Independent telephone industry's representative on the National Telephone Commission of the War Labor Board.

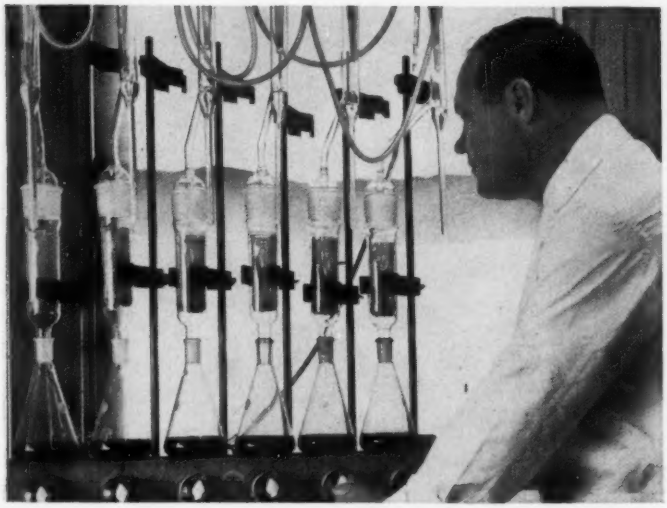
In 1944, Mr. Shepherd was named vice president-general manager of the General Telephone Co. of Illinois. From 1947 to 1950 he served as president of four of the General Telephone System operating companies in Indiana, Michigan and Kentucky.

He has been active in telephone industry affairs on the state and national association level, having served as a director of the United States Independent Telephone Association and several state associations.

TECHNICAL BRIEF NO. 60-1

By D. L. DAVIES, *Manager, Technical Dept. Wood Preserving Div., Koppers Company, Inc.*

USE OF THE ASSAY METHOD TO DETERMINE RETENTION IN POLES



PRESENT STATUS

The Assay Method of determining preservative retention in pole charges has been described in Koppers Technical Bulletins W-101 and W-102. Following is the status of the Assay Method as a replacement for the less accurate gauge method of determining preservative retention.

The Western Electric Company, Inc. over 2 years ago made the Assay Method a part of its specifications on all new pole contracts. This major specification change was adopted to eliminate "weak sister" charges — charges which meet standard specifications by other measurement tools, but which in reality do not contain sufficient preservative to provide long-lasting protection.

The Rural Electrification Administration in April, 1960 issued new specifications which make mandatory that determination of retention in poles be made by the Assay Method. Many REA utilities have suffered financial loss from premature pole failures. They, too, want to eliminate the "weak sisters".

The Federal Government has a tentative specification TT-W-571f, now being reviewed by industry, which also calls for the Assay Method for determining retention (without alternates) in both poles and piles.

The AWPA adopted the Assay Method for determining retention in poles as a "full standard" at the April 24-26, 1960 meeting.

HOW TO APPLY THE ASSAY METHOD

In applying the Assay Method to poles, the specifications require that the outside ½" of the pole section be discarded. This section usually contains about 14-lb. preservative per cubic foot. Specifications further require that the next 1½" be assayed for retention. Therefore, an 8-lb. normal gauge retention charge must have a minimum of 6-lbs. per cubic foot in this zone. A 10-lb. treatment must have 7½ lbs. and a 12-lb. treatment must have 9-lb. in the assayed zone. No undertreatment allowance is permitted. Adoption of these retention requirements represents the most significant advance in standards for pine pole treatment since the adoption of 2½" or 85% sapwood penetration requirement in the late 1930's.

ANY COMPANY CAN ADOPT THE ASSAY METHOD

The status of the Assay Method for determining retention has advanced to the stage that any company can adopt it by a simple notation on the purchase order specifying that "poles are to be treated to a retention of *x* pounds/cubic foot as determined by assay".

• • • • • • • • • • •

For the full report on using the Assay Method, or answers to technical questions on poles or pole treatment, write: Koppers Company, Inc., Wood Preserving Division, Technical Dept., Room 757, Koppers Building, Pittsburgh 19, Pa.

C-45

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4-Millionth O. Telephone Installed in Mansfield

A gold plate on a telephone in the home of Mr. and Mrs. Robert Meese bears this inscription: "The Four Millionth Telephone in Ohio, installed in Mansfield, O., Oct. 6, 1960." The telephone, one of the new small models in ivory, was installed on Oct. 7 by The Mansfield Telephone Co., and was connected by Richard Warne, installer. The first call was made by the 14-year-old daughter of the household, Marilyn, a pupil of the Johnny Appleseed Junior High School.

Of the 4 million telephones in Ohio, 855,155 are operated by 108 Independent companies.

Witnessing the installation ceremony were Robert D. Gott, of Wellington, O., general manager of The Wellington Telephone Co., and president of the Ohio Independent Telephone Association; Neil Robinson, Richland County representative; and R. J. Maxwell, general manager of The Mansfield Telephone Co.

The installation marked the 38,000th telephone for the Mansfield company and climaxed 80 years of service which started only four years after Alexander Graham Bell invented the telephone. The first telephone in Ohio was installed in Cleveland on June 25, 1878 and the first telephone exchange was placed in service in Cincinnati on Sept. 1, 1887. Mansfield service started in 1880.

Ohio's 4 millionth telephone is installed by Richard P. Warne, installer for the Mansfield Telephone Co., in the home of Mr. and Mrs. Robert Meese, as they and their family (David, Jane, Debbie, and Marilyn) watch on this historic occasion. The telephone set is properly inscribed to commemorate the event.

Automatic Grocery Orders

Twenty West German cities are participating in a project whereby a housewife can order her groceries via a punch card attachment to her telephone. The homemaker dials the store number and then inserts cards into the special attachment. Food, housewares and tobacco products may be ordered from a selection of brand names carried on 180 punch cards.

N. Y. Company Becomes Subsidiary of ITC

Independent Telephone Corp., Dryden, N. Y., has acquired in excess of 80 per cent of the stock of Jasper-Steuben Telephone Corp., Jasper, N. Y., William B. Harrison, president of ITC, disclosed on Oct. 17.

Jasper-Steuben corporation was formerly affiliated with ITC and now becomes a subsidiary.

Control of Jasper-Steuben was achieved pursuant to an offering to purchase shares owned by that corporation's stockholders. The offering was made with the authorization of the New York Public Service Commission. The Jasper-Steuben corporation serves an area contiguous to that served by the Allegany Telephone Co., Alfred, N. Y., another subsidiary of ITC.

The ITC system now comprises 11 subsidiary companies and four affiliates providing telephone service in New York, New Jersey, West Virginia and Michigan.

Selective Vision

"The eye observes only what the mind, the heart, and the imagination are gifted to see; and sight must be reinforced by insight before souls can be discerned as well as manners, ideas; as well as objects, realities and relations; as well as appearances and accidental connections."—WHIPPLE.

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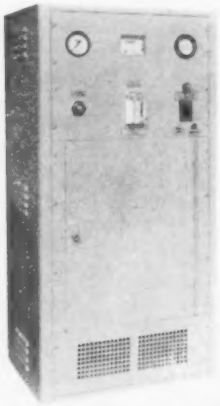

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Stromberg-Carlson Appoints Robison Clark Controller

The appointment of Robison Clark as controller of the Stromberg-Carlson Division of General Dynamics Corp. has been announced by Allan R. Shilts, vice president and general manager.

ROBISON CLARK

Mr. Clark goes to Stromberg-Carlson from the Link Division of General Precision, Inc., in Binghamton, N. Y., where he served as controller for the past three years. Previously, he had been controller of B. T. Babbitt, Inc., controller and secretary of Reeves Brothers, Inc., and controller of Standard Brands International, all in New York City.

Reared in East Orange, N. J., Mr. Clark was graduated from Lehigh University in 1939 with a bachelor's degree in accounting and finance.

Following graduation he was associated with the American Steel & Wire Division of the U. S. Steel Corp., in Cleveland, in various accounting and financial positions.

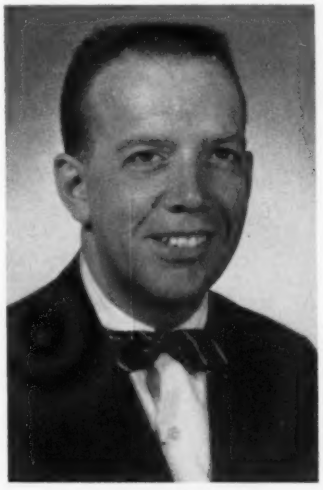
He joined the U. S. Navy in 1944, and served two years as Combat Information Center officer aboard a Third Fleet cruiser.

Mr. Clark is a member of the Controllers Institute, and of the National Association of Accountants.

Tintsman Is Training Head Of Power Equipment Co.

The appointment of Carl C. Tintsman Jr. as training manager of the Power Equipment Co., Galion, O., has been announced by A. V. Ryon, director of industrial relations.

In this position, Mr. Tintsman will be responsible for personnel policy and practice with respect to management development, supervisory training, and employe self-improvement.



C. C. TINTSMAN JR.

Mr. Tintsman was formerly manager of employe training at the Remington Rand Univac Engineering Center, Philadelphia, Pa. At Remington Rand, he co-ordinated professional and technical training activities and administered the technical advancement program.

Prior to this, he was a consultant with Fred Rudge Associates, Inc., New Canaan, Conn., and earlier, he was a

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staff member of General Motors Institute, Flint, Mich.

Tintsman is a graduate of Case Institute of Technology, Cleveland, O., where he obtained a B.S. E.E., and did post graduate work in psychology at Western Reserve University and Kent State University.

R. F. Sandall New AE Sales Engineering Representative

Robert F. Sandall has been named an engineering representative for the government sales division of Automatic Electric Sales Corp., Northlake, Ill.

Mr. Sandall will be responsible for providing military customers with engineering assistance and new product information. His headquarters will be in a new office in Mobile, Ala., which serves the states of Oklahoma, Texas, Mississippi, Louisiana, Alabama, Arkansas, Georgia, Florida and Tennessee.

The appointment was made by the government sales division to furnish closer liaison between the company and the armed services.

Prior to joining Automatic Electric, a subsidiary of General Telephone & Electronics, Mr. Sandall was a contract technician for the U. S. Air Force at Westover AFB, Mass. During his military service, he served with the U. S. Army Signal Corps as a non-commissioned officer in charge of telephone maintenance.

E. C. Buurma Appointed NW Region Manager of Philco

The appointment of Edward C. Buurma, of Palo Alto, Cal., as northwest regional manager, was announced on Oct. 17 by Joseph M. Hertzberg, vice president-marketing, government and industrial group of Philco Corp.

Mr. Buurma, who will be headquartered at Philco's Western Development Laboratories, 3875 Fabian Way, Palo Alto, will be responsible for maintaining contacts with Philco customers in central and northwest United States.

He will assist the marketing staffs of the following government and industrial group divisions: communications and weapons; communications systems; computer; Western Development Laboratories and of the Sierra Electronics Division, Mr. Hertzberg said.

Automatic Electric Appoints Byers Marketing Analyst

Groves J. Byers has joined Automatic Electric Sales Corp. as a marketing analyst in the marketing services division.

In this capacity, Mr. Byers will be concerned with market surveys for the company's communications products and industrial products divisions. The appointment was made in an expansion move by the market research department.

G. J. BYERS

Prior to joining the company, Mr. Byers was working toward a Ph.D. degree and serving as a teaching assistant at the University of Illinois, where he received his M.S. degree in economics and finance in 1958. He received his B.S. degree in business administration from St. Mary's University of Texas at San Antonio.

He was formerly associated with General Electric Co. at Evendale, O., and with the Springfield (Ill.) Marine Bank.

Southwestern Bell Tells Mo.-Ill., Directory Changes

James B. Nichols has been appointed general sales and service manager for Southwestern Bell Telephone Co.'s Missouri-Illinois area, a new position in the company. Mr. Nichols has been general sales manager on the company's headquarters staff.

Robert M. Arms, general servicing supervisor, will succeed Mr. Nichols.

In another appointment, George C. Garven has been named to the new position of general directory manager for the company. He now is directory manager in Oklahoma City.

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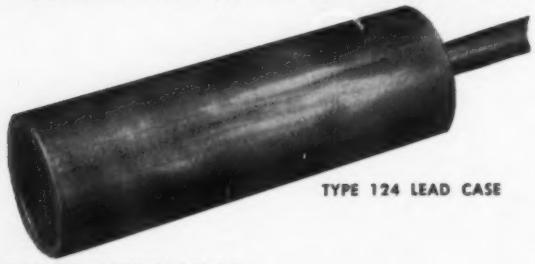

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Malvern Soper Named by North As Production Head

J. F. Dolland, vice president-manufacturing of North Electric Co., has announced the appointment of Malvern Soper to the position of director of planning and production control.

MALVERN SOPER

Mr. Soper will assume responsibility for production planning, scheduling, production control, shipping and receiving.

Previously, he was production control manager of the Crosley Division of Avco, at Richmond, Ind. Mr. Soper has more than 22 years of experience in production control in both commercial and military fields.

E. J. Whalen Elected Secretary ITT Corp.

Election of Edward J. Whalen as secretary of International Telephone & Telegraph Corp. was announced on Oct. 22 by H. S. Geneen, president.

Mr. Whalen had been director of contract administration for ITT Laboratories and ITT Communication Systems, Inc., divisions of ITT located in New Jersey.

He joined the ITT System in 1954, following service with the U. S. Army Judge Advocate General's Office.

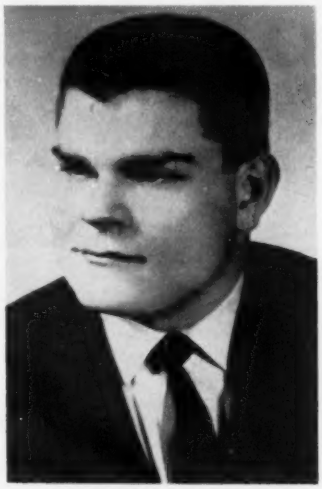
The new officer is a graduate of Youngstown University and University of Cincinnati, where he was awarded a bachelor of laws degree. He also studied at Ohio State University and St. Vincent's College, Latrobe, Pa.

Aimless Pursuit

"The irresolute man flits from one egg to another, so hatches nothing."—FELTHAM.

C & D Batteries Names St. Paul Representative

John F. Feess has been appointed sales representative for C & D Batteries, of Conshohocken, Pa. in St. Paul, Minn.



J. F. FEESS

Mr. Feess has been with the Battree Co. in Milwaukee since 1956. He graduated from Marquette University in 1960.

Mr. Feess will maintain an office for C & D at 1821 University Avenue, St. Paul.

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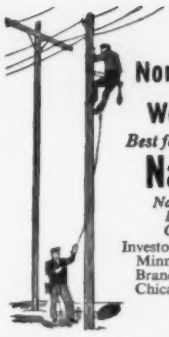

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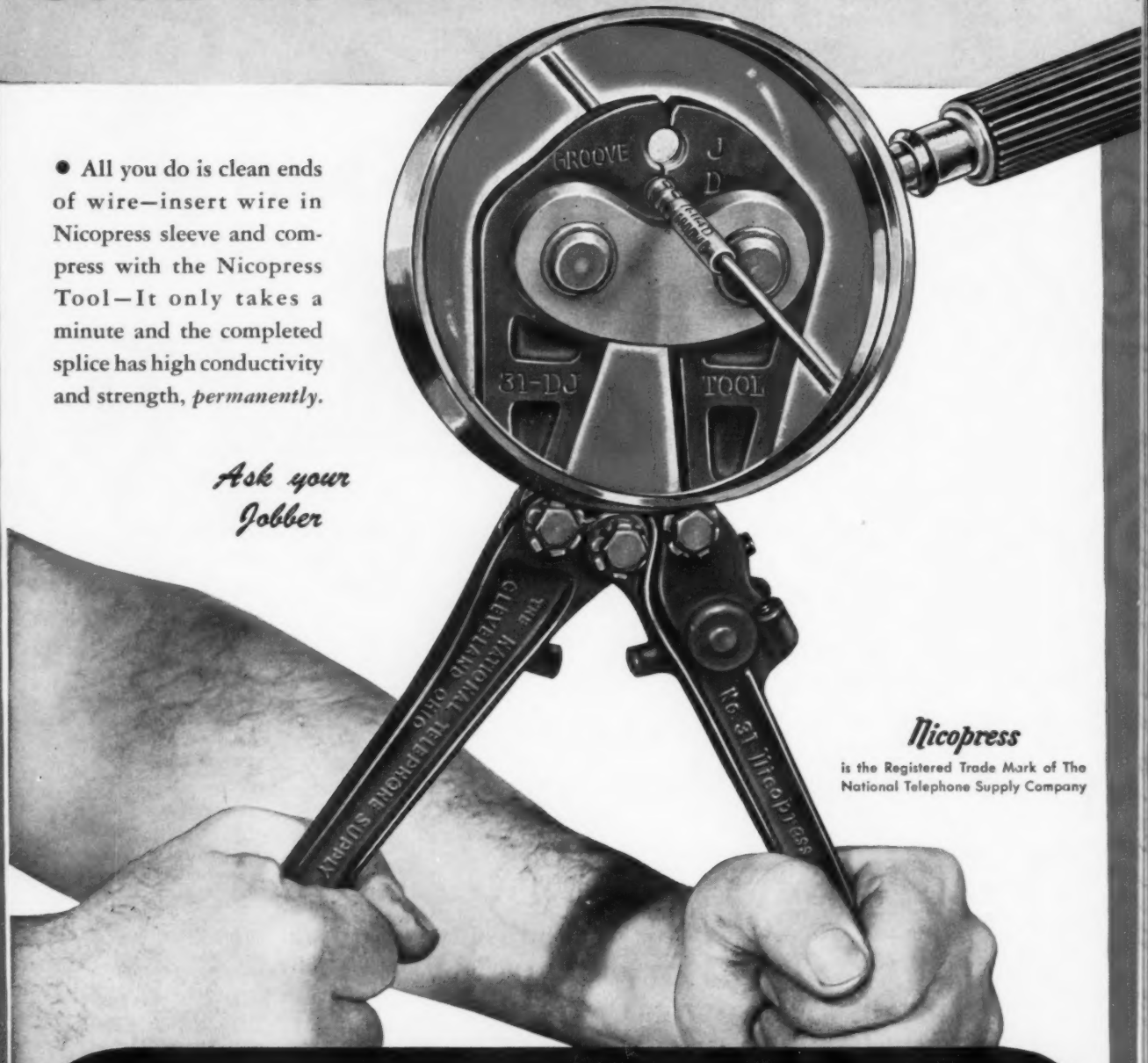

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